THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXXI. NEW YORK, SATURDAY, SEPTEMBER 25, 1897. No. 13.

ORIGINAL ARTICLES.

THE EARLIEST POSSIBLE RECOGNITION OF TUBERCULOSIS.[1]

BY JAMES T. WHITTAKER, M.D.,
OF CINCINNATI, OHIO.

IT is now established that pulmonary tuberculosis develops in consequence of the inhalation of the tubercle bacillus from the sputum of other tuberculous individuals. The ignorance of this fact and indifference to it hitherto, with the neglect of the simplest precautions, satisfactorily accounts for the appalling number of cases of the disease, and accounts, also, for the insidiousness of the infection. In most cases the source of contamination may be discovered in long and close association with the patient. But the infection may lie latent for years. Childhood is the period of most frequent infection, puberty of most frequent manifestation. Experience with the diseases of children based upon *post-mortem* examination shows that the first tuberculous deposits occur in the lungs, remain latent, and manifest themselves by physical signs and symptoms only after puberty. (Penzoldt.) During this long interval the disease may show itself only in general impairment of health, with headache, earache, otitis media, nervous dyspepsia, neurasthenia, rheumatoid pains, amenorrhea, etc. Children who suffer from frequent or more or less continuous malaise, who feel more than others the confinement of the schoolroom, who are said to be delicate and disposed to phthisis, should be tested for tuberculosis.

The following are a few of the earliest signs of tuberculosis:

Odor of Breath.—Rosenbach speaks of an odor of the expired air peculiar to phthisical patients. This odor, he says, is like that of bronchitis, but is distinguished by a kind of faint sweetness, probably due to the action of protozoa.

Red Line on the Gums.—The occurrence of a red line on the gums, the so-called Frederick-Thompson line is well-known. I attach no importance to it. It is said to be observed most frequently in the young. I have looked for it, but found it only exceptionally.

Clubbed Fingers.—Of clubbed fingers I will say nothing, save that they are also seen in certain forms of heart disease. In phthisis they belong to the phthisical habitus, which is interpreted in our day as an already existing infection.

Local Signs.—Every obstinate local affection of bones, joints, skin, testis, or Fallopian tubes, should excite suspicion. Adenitis is extremely suspicious.

Fever.—The importance of anything like a continued or frequently recurring fever, without known cause, is now universally appreciated. The elevation of temperature may be only a fraction of a degree, but it shows itself every evening and during a period of several weeks or months. This sign has now become so significant as to at once excite the suspicion of tuberculosis. Absolutely reliable conclusions may be drawn only when the temperature is taken *per rectum*. The temperature should be observed three times a day. The evening records are most desirable. Malaise and increase of temperature contribute all the more directly to the diagnosis if they are associated with impairment of nutrition, anorexia, blood changes, or anemia, and especially with chlorosis. The younger Klebs, who tests every such patient without exception with tuberculin, has never yet failed to get the reaction of tuberculosis in chlorosis.

Night-sweats.—Night-sweats usually belong to a later period in the history of the disease, in fact, to the septic period; but they sometimes show themselves early, in exceptional cases preceding even cough or any pronounced change in nutrition.

Albuminuria.—Albuminuria is wont to show itself to a slight degree in the earliest stages of phthisis. Tissier speaks of an albuminuria as pretuberculous, which he noticed mostly in the morning, with a concomitant phosphaturia, in a regular intermittent cyclus, preceding all other symptoms of pulmonary tuberculosis. The albuminuria disappeared as soon as the tuberculosis had become definitely established. I have seen the albuminuria disappear in this way, but I have never observed phosphaturia in these cases. This albuminuria is not a symptom of nephritis; it is a toxic alteration of the albumen, whereby it becomes more dialyzable. Erythesmus cordis, palpitation, and early dyspnea are symptoms of this same toxemia.

The Diazo Reaction.—The diazo reaction, in my experience, is much less common, and is less reliable, though it may indicate the tuberculosis which often follows measles. This reaction is absent at first, but

[1] Abstract of a paper read at the Twelfth Annual Meeting of the Association of American Physicians, held at Washington, D. C., May 5, 1897.

shows itself suddenly and continuously up to the time of death in the typical miliary tuberculosis of children.

In miliary tuberculosis the tubercle bacillus may be demonstrated in the blood. Krönig withdraws a few drops of blood, dilutes it with 10 c.cm. of acidulated distilled water, subjects it to the centrifuge for two minutes, and examines the sediment in the usual way for tubercle bacilli.

Cough.—Cough, which is the commonest symptom of phthisis, sometimes leads us astray in making a diagnosis from chronic bronchitis, chronic pneumonia, and chronic influenza, which may all be independent of tuberculosis. It is the morning and evening cough which is most suspicious, but any cough which continues for more than three weeks should lead to further exploration. There may be no cough at all in acute miliary tuberculosis. Latent deposits do not excite cough.

The Tubercle Bacillus in the Sputum.—Much depends upon the source of the specimen of sputum, and the patient must be instructed to bring up secretion from the lungs. The use of the centrifuge after the fluidification of the sputum by soda or potash shortens the examination and increases the value of the test.

Hemorrhage.—Sometimes the occurrence of hemoptysis is the first positive indication of the existence of phthisis. Under all circumstances the spitting of blood is suspicious, premising, of course, that the blood comes from the lungs. It is not too sweeping an assertion that when hemoptysis occurs in a person apparently enjoying perfect health, it is a sure indication of tuberculosis.

Tuberculin.—The first test dose of tuberculin for the cases of lightest infection (suspected) should be 5 mg., the second 10 mg., or 1 cg., the third 2 cg. These doses may be given on succeeding days, or better, every other day, preferably in the evening, that the temperature records may be properly observed on the following day. Failure to obtain reaction after three tests excludes the presence of tuberculosis.

The most serious objection to the use of tuberculin, and that which limited its general use in the beginning, was the one first urged by Virchow, that it awakened tuberculosis from latent sources and disseminated the disease. This statement was eagerly caught up and echoed on all sides. Baumgarten believed that under its influence a more rapid and abundant colonization of bacilli occurred in the lungs. Fürbringer went so far as to declare that miliary tuberculosis was found oftener in patients treated by tuberculin than in the non-injected. This authority invoked the aid of statistics in the statement that miliary tuberculosis was found in the lungs after the use of tuberculin in forty-three per cent. against six per cent. in the non-injected, and a general tuberculosis was found after the use of tuberculin in twenty-one per cent. against ten per cent. of the non-injected. But these objections are now matters of mere historic interest, for competent observers everywhere, following the footsteps of Guttman and Ehrlich in Germany, and Trudeau, Dennison, and Klebs in this country, bear testimony to the fallacy of these views, and to the unquestionable efficacy of the agent as a diagnostic medium.

It was in vain that the advocates of tuberculin, especially Guttman and Ehrlich, protested that these results were observed only when the agent was used in too large doses or in too advanced stages of the disease. I have used tuberculin every day in hospital and private practice for six years, now in more than 1000 cases, and have never seen evil result from it.

Koch, April 1, 1897, declared that the fear of the tubercle bacilli being rendered mobile in consequence of the reaction produced by the administration of tuberculin, and therefore being transmitted to healthy animals, has been shown, in many thousands of injections made in cattle, to be perfectly groundless. "My own individual experience in the use of tuberculin in the early diagnosis of tuberculosis in man coincides with and supports this view. In all these cases there was never the slightest intimation of anything like a mobilization or transmission of tubercle bacilli. This experience should entirely annul the foolish prejudice which exists regarding the causing of mobility of tubercle bacilli, and it should put the diagnostic value of tuberculin in the recognition of tuberculosis in man upon the same plane as in animals."

The following cases of positive and negative evidence, selected from a large number of cases, illustrate the value of tuberculin as a means of diagnosis:

Neurasthenia. Positive Evidence.—Miss M., aged eighteen years, a tall, fragile, delicate-looking girl, complained of languor, palpitation upon exercise, and fatigue. The menses were sometimes delayed. No other anomaly was observed. There was no cough and no fever. I had treated the mother of this girl for incipient tuberculosis, the diagnosis having been established by the discovery of the tubercle bacillus in the sputum in the absence of physical signs, and felt sure that the patient had some local deposit in consequence of having lived so long in the atmosphere of infection. A test-dose of tuberculin, 1 mg., was given at 2 P.M. Reaction set in the following morning at 8 o'clock, with chill, fever, temperature of 103° F. during the course of the day, pain in the bones, headache, etc., the symptoms all subsiding the same night.

Negative Evidence.—Miss H., aged twenty-two years. History of tuberculosis in family of both

father and mother. Patient very tall, exceedingly slender, and emaciated, extremely elongated, cylinder-shaped thorax. Confined to bed for several months. No cough; no fever; good appetite. Test-injections of tuberculin, 0.005, 0.01, and 0.02, negative. This patient is improving rapidly under a pneumatic and general tonic treatment.

Night-sweats. Positive Evidence.—J. M., aged twenty-eight years, had had slight cough, morning and evening, during several months, with night-sweats every night. No other sign of illness. Examination in every way negative. No cough; no bacilli in what sputum he could raise. Complete reaction to tuberculin, the use of which twice a week in gradually increasing doses, completely arrested the night-sweats after three weeks.

Sister of Charity, aged twenty-six years. Brought to the hospital to be treated for night-sweats, with which she had been affected for more than a month, and which proved refractory to the use of atropin, agaricin, and quinin, but which ceased entirely after three weeks under the use of gradually increasing doses of tuberculin.

Negative Evidence.—A. M., aged twenty-two years. Melancholia, sexual neurasthenia, prostatorrhea. Night-sweats for several weeks, occasionally profuse. Test-injections of tuberculin, 0.001, 0.005, 0.01, negative. The night sweats ceased and the patient improved in every way under the use of quinin and aromatic sulphuric acid, together with urethral injections of lactate of silver, two per cent., with the Ultzmann catheter.

Joint Disease. Positive Evidence.—Mrs. W. C. S., aged twenty-nine years, tall, delicate, pallid. Lived in a house several months with an uncle who died of tuberculosis. Had one miscarriage one year ago at two months. Complained of general weakness and pains in the trunk, especially on turning. There was some stiffness of the right wrist. No cough, but short-breathing on exercise. Temperature 99° F. No physical signs save perhaps a slightly defective expansion of the right lung. Test-injection of tuberculin increased the temperature two degrees.

This patient subsequently developed tuberculosis of the right carpus, which finally necessitated amputation of the forearm. Notwithstanding this extreme measure, the patient succumbed to acute tuberculosis three months later.

Negative Evidence.—Miss F., aged thirty years. March 18, 1897. Diagnosis, chronic rheumatism. Right elbow swollen; hand and arm cold, blue, and anesthetic. The disease proving refractory to salicylates, iodin, and external applications; test-injections of tuberculin were given, one on April 17th, and one on April 19th, 0.01 and 0.02, respectively. No reaction.

Pulmonary Tuberculosis. Positive Evidence.—W. V., aged thirty-eight years; four children, two tuberculous. Had "lung disease" as a child seven or eight years old, and pneumonia three years ago. Gained in weight since, from 130 to 150 pounds. Cough during seven or eight months with considerable catarrh. Expectorated tough, white mucus. Physical examination entirely negative. Lungs clear, with good expansion. Examination of sputum showed presence of one or two bacilli, not absolutely certain. Injection of tuberculin, 0.01 at noon, produced elevation of temperature one and one-half degrees the next morning.

Negative Evidence.—A physician brought his daughter, aged sixteen years, to me, a diagnosis of Bright's disease having been made, because during three months she had had headache, lassitude, and slight albuminuria. Her temperature for the most part was subnormal, but showed occasional elevations of one-half to one degree. There was nothing in the condition of the urine to indicate Bright's disease. The specific gravity was normal. There were no casts. The diazo-reaction was constant. I felt sure that the albuminuria depended upon a change in the albumin from a toxemia. Although there was no cough, I suspected a latent tuberculosis, but after a thorough test with tuberculin, I had to abandon this suspicion. I then tested the blood with a typhoid culture and found the typical agglutination and arrest of motion of bacilli described by Widal. Having fortified this observation on two subsequent occasions, at intervals of a week, I felt justified in attributing the condition to typhoid fever.

Abdominal Tuberculosis. Positive Evidence.—Mrs. A. P.; pain and swelling of the abdomen during three months, with gradually increasing weakness and loss of flesh. Temperature subnormal. No cough. No evidence of disease of the lungs; abdomen somewhat distended; obstipation. Palpation revealed nodulation, as from agglutination of the intestine. Satisfactory reaction to tuberculin. Subsequent laparotomy, with recovery.

Negative Evidence.—Mrs. P., aged forty years; membranous enteritis. No history of tuberculosis, but had had anal fistula, which excited a suspicion of the presence of tuberculosis. Test-injections of tuberculin were negative. Treated subsequently with europhen suppositories. Condition much improved.

Sore Throat. Positive Evidence.—K. T., female, a aged twenty years; incipient tuberculosis. Had been treated with tuberculin and sustained by it for two years, the disease having made no advance in that time except when the patient interrupted the treatment for several months. Sore throat appeared occasionally, apparently being of catarrhal origin, but upon one occasion, under maximum dosage, a crop of ulcers marked by grayish-white deposit appeared about the larynx, with edematous infiltration of the interarachnoid mucosa. The treatment was interrupted for one week, after which the dose was resumed in less amount, and under gradually increasing dosage the ulcers disappeared.

C. P., aged twenty years, in perfect health "until upon one occasion he was shaved by a barber and had hairs pulled out of a pimple, which had become sore, by means of hair-forceps. The barber dug under the skin with his pincers." Two weeks later the glands became affected and the general health began to suffer. The throat became sore. Two months later the patient came to me with the glands swollen un-

der the right jaw, the arm, and in the right groin. In the course of a week sore throat developed, with uniform redness and swelling, and with the formation of one ulcer on the side of the veil of the palate. I first suspected an accidental inoculation of syphilis, and treated the patient with mercurial inunctions and iodin. There was no material improvement under this treatment. As I had previously treated a member of his family for pulmonary tuberculosis, it occurred to me to make a test-injection of tuberculin. This injection was followed by a typical reaction. I then commenced the regular treatment, finding that every increase in the dose was attended by manifestations of tuberculous deposits in the throat. It appeared as if colonies of bacilli under the mucosa had been brought to the surface by the tuberculin. They were always soon destroyed by local applications of nitrate of silver in stick form, and the patient made a good recovery after three-months' treatment with tuberculin.

Negative Evidence.—Miss H. had been aphonic for several weeks. The voice was husky for months. The general health was poor. There was considerable pallor and apparent weakness, but no fever or sweats. The patient expressed herself in whispers. There was no cough and no sputum. The examination of the chest was entirely negative. The larynx was catarrhal throughout. The epiglottis was heavy and concealed the interior. At times, however, a glance could be obtained within the throat, revealing a thickened, reddish, gelatinous-looking mass, at the middle of the left vocal cord.

A test-injection of 1 mg. of tuberculin gave no reaction. A second injection of 5 mg. gave no reaction; a third injection of 10 mg.—*i.e.*, 1 cg., gave no reaction. I then excluded tuberculosis, cocainized the throat, and touched the gelatinous mass twice with nitrate of silver melted upon the end of a laryngeal probe. The mass melted away, and the patient recovered the use of her voice in two weeks.

The importance of an early diagnosis no more requires mention here than a repetition of the well-known fact that the disease, at all times amenable to arrest at this stage, has now, under the use of the perfected tuberculin, probably become subject to absolute cure.

The examination of the sputum should include a search for the influenza bacillus, for the diplococcus of pneumonia, and for the streptococcus and other pyogenic micro-organisms. The exclusive presence or predominance of these micro-organisms determines the complications of tuberculosis. The majority of these patients, as we now know, succumb not to tuberculosis but to sepsis. The failures in the treatment of the disease in man with the specific remedies hitherto employed, are largely due to the fact that tuberculosis in man becomes in the later stages a mixed infection. These are the cases which are benefited to the greatest extent by creosote, climatotherapy, etc. Jakowski developed pyogenic bacteria nine times in seven patients from the blood of hectic fever. But, as Hewelke concludes, negative findings in the blood do not justify negation of mixed infection in pulmonary tuberculosis.

These studies will give us new subdivisions and new names—streptomycosis, staphylomycosis, etc.—but in the meantime will tend to reinstate the old term, phthisis, by the demonstration that pulmonary tuberculosis is only one of the forms of this disease. This observation does not under rate the gravity of tuberculosis, because it is the tubercle bacillus which prepares the way for the invasion of the secondary or pyogenic micro-organisms. We may now distinguish uncomplicated tuberculosis, which marks only a small percentage of all cases of lung disease, runs a course without fever, or, if fever exists, is unfavorable because the disease is then so far advanced. These uncomplicated cases are especially suitable for tuberculin treatment. Most cases of later course represent infection with the streptococcus, and these are to be separated into those of active course with fever, and passive without fever. The distinction chiefly lies in the fact, that in the first case the parenchyma of the lungs is attacked with the streptococci, while in the second, the streptococci lie only in superficial colonies in the bronchi, etc. (Spengler.) Rarer cases are mixed infections with the pneumococcus, micrococcus tetragonus, staphylococcus, influenza, and pseudo-influenza bacillus. All these forms, associated with fever, are to be treated only tentatively with tuberculin until the complicating affections have been subdued, if they can be, by the open-air treatment, by creosote, cognac, climate, etc. Ten years ago I reported some remarkable arrests of this kind of sepsis by means of the administration of pure oil of garlic.

Most of the cases of phthisis are readily recognized as such, and need no test-injections, but the diagnosis in our day demands a differentiation of cases. Moreover, the diagnosis should be declared sooner, for it is plain now that the earliest possible appreciation will lead to the extinction of the disease.

Preservative Power of Glaciers.—In October, 1866, Capt. Henry Arkwright and three companions were killed by an avalanche on the Grand Plateau of Mt. Blanc. The bodies of the three companions were recovered a week after the accident, but that of Captain Arkwright could not be found. During the present summer, however, the melting glacier presented it to view 9000 feet below where he was killed thirty-one years ago, and it was recovered. The head and feet were missing, but otherwise the body was perfectly preserved. The right hand was especially life-like, even the red tint of the blood having been preserved. All of his personal ornaments were intact, and the white handkerchief in his pocket still retained his name.

NOTES ON THE ETIOLOGY OF INFLAMMATION OF THE ACCESSORY SINUSES OF THE NOSE.[1]

BY W. T. HOWARD, JR., M.D.,
OF CLEVELAND, OHIO;
PROFESSOR OF PATHOLOGY OF THE WESTERN RESERVE UNIVERSITY;
AND
J. M. INGERSOLL, M.D.,
OF CLEVELAND, OHIO;
LECTURER ON OTOLOGY, RHINOLOGY, AND LARYNGOLOGY IN THE MEDICAL DEPARTMENT OF THE WESTERN RESERVE UNIVERSITY.

(From the Pathological Laboratory of the Western Reserve University.)

IN the present paper we wish to make a preliminary report on the results of our studies of eighteen cases of inflammation of the accessory sinuses of the nose. The material for the most part has been derived from the private practice and dispensary service of one of the writers (Ingersoll), but to the courtesy of Drs. Hamann, Bunts, Sherman, Stephan, and Wenner we are indebted for the opportunity of making cultures in the cases of several patients on our list. The cases were both acute and chronic, some dating, according to the histories, from twenty to thirty years.

We shall limit ourselves in the present report to a statement of the results of our studies, and leave the details of the cases and cultures for a later article. Our cases include suppurations of the antra, and the ethmoidal and frontal sinuses. We have not met with inflammation of the sphenoidal sinuses. The methods employed for obtaining the material for study were several. From the antra the material was obtained in one of three ways: (1) By exploratory puncture with a straight trocar well up under the middle third of the inferior turbinal in the majority of cases; (2) through an opening in the alveolar border of the superior maxilla, after the extraction of a tooth; and (3), in two cases in which neither of the first methods could be adopted, pus was obtained by means of a platinum needle, or a cotton swab, from or near the orifice of the maxillary opening. In all cases the utmost care was used to cleanse the nose and to avoid contamination of the pus and infection of the patient. Pus from the frontal and ethmoidal sinuses was usually obtained at the time of operation; in one case, however, it was obtained by puncture, and in two through spontaneous openings.

The methods of examination of material obtained from the sinuses was as follows: Both stained and unstained coverslip preparations were studied, and the kinds and relative number of the cells were noted. Tubercle bacilli and protozoa were looked for, but always with negative results.

Cultures were made on coagulated blood-serum, and on agar-agar plates.

The pathogenesis of nearly all the organisms found was determined by inoculation of rabbits or guinea-pigs.

The antrum of Highmore was involved in fifteen cases, with a total of seventeen antra; the right antrum in five cases (VII., X., XI., XVII., XVIII.), in three cases alone, and in one case with the ethmoidal sinuses (VII.); and in one case with the frontal and ethmoidal sinuses (XVII.). The left antrum was involved eight times alone (Cases I., II., III., IV., VIII., IX., XIII., XVI.). Both antra were affected in two cases (VI. and XIV.), and in each of these the ethmoidal sinuses were involved. In these cases the process was chronic. Three of the cases of antral disease were acute (IV., VII., XI.), and twelve were chronic. Two of the acute cases followed influenza (IV. and VII.). In the first the streptococcus pyogenes was found in pure culture, and in the second, the influenza bacillus and the staphylococcus pyogenes aureus; the third case followed a severe coryza, and the diplococcus lanceolatus and the pseudo-diphtheria bacillus were found. Of the twelve chronic cases, two followed influenza (I., XIII.), the first being associated with hypertrophy of the inferior turbinal, and was complicated with facial erysipelas, an abscess of the alveolar process of the superior maxilla, and a fatal secondary septicemia, due to the streptococcus pyogenes. There was found in the antrum of this patient, who came to autopsy, a polypus, and the walls were swollen, deeply congested, and edematous. In the second patient the nose was normal, and cultures from the antral contents gave the bacillus mucosus capsulatus.

Case II. was secondary to a syphilitic ulceration of the alveolar and palatal processes of the superior maxilla. In the pus from the antral cavity the streptococcus pyogenes, the staphylococcus pyogenes aureus, and the bacillus mucosus capsulatus were found. In this case nasal polypi were also present.

Case XVII. followed an acute coryza subsequent to exposure after pneumonia, and was apparently of thirty-years' standing. There is no record of the condition of the nose. The frontal and ethmoidal sinuses were involved with the right antrum. In the cultures from the antrum, the streptococcus pyogenes, and the staphylococcus pyogenes aureus were found.

In Case XVIII. the *atrium infectionis* was apparently through a decayed bicuspid tooth. In the cultures from the pus the diplococcus lanceolatus was found in pure culture. There is no record of the condition of the nose. In Case VIII. there was

[1] Read at the Fifty-second Annual Meeting of the Ohio State Medical Society, Cleveland, May 31, 1897.

tenderness and swelling about the first and second bicuspids of the affected (left) side, but there was nothing wrong with the teeth themselves. There was hypertrophy of the left inferior and middle turbinals. Cultures in this case gave the staphylococcus pyogenes albus and a thread fungus which was not pathogenic for guinea-pigs or rabbits. In Case XVI. there had been a purulent discharge from the right nostril for a year, and there was pain and swelling about the second left bicuspid tooth. The tooth was badly decayed and an abscess extending from it was found. The streptococcus pyogenes and the staphylococcus pyogenes aureus grew in the cultures. In Cases IX. and X. there was a long-standing atrophic rhinitis. In Case IX. there was anemia and neurasthenia. Cultures from this patient gave the staphylococcus pyogenes albus and an unidentified bacillus. In Case X. the streptococcus pyogenes and the staphylococcus pyogenes aureus were found.

Of the two cases of bilateral empyema of the antrum, Case VI. had had a purulent discharge from the left nostril for twenty-two years, and from the right nostril for twelve years. Twelve years before coming under observation all the upper teeth had been extracted and a plate inserted. About five years ago there was an otitis media acuta sinistra. Since then both nasal fossæ have been occluded and the sense of smell lost. On examination both nasal fossæ were found to be filled with polypi, and one large polypus filled the nasopharynx. From the right antrum a pure culture of the streptococcus pyogenes was obtained. From the left, the streptococcus pyogenes and bacillus mucosus capsulatus. In Case XIV. the streptococcus pyogenes was obtained from both antra. There is no note of the condition of the nose, or of antecedent acute infectious disease in this case. In both cases (VI. and XIV.) the ethmoidal and frontal sinuses were involved.

Of the chronic cases, three followed acute infectious diseases (influenza, coryza, and pneumonia), one was due to syphilitic ulceration of the hard palate and alveolar process; two were clearly, and another possibly, secondary to dental decay, and two were associated with atrophic rhinitis; in three cases there were nasal polypi present, and in three there were hypertrophies of the turbinals.

In the seventeen antra examined, the streptococcus pyogenes was found in eleven, five times alone, four times with the staphylococcus pyogenes aureus, once with the bacillus mucosus capsulatus, and once with the pneumococcus and the bacillus mucosus capsulatus. The staphylococcus pyogenes aureus was never found alone, but with the streptococcus pyogenes four times (III., X., XVI., XVII.), and with the influenza bacillus once (Case VII.). The bacillus mucosus capsulatus was found alone in one case (XIII.), with the streptococcus in the left antrum of Case VI., and with the diplococcus lanceolatus and the streptococcus pyogenes in Case II. The diplococcus lanceolatus occurred alone in one case (XVIII.), once with the pseudodiphtheria bacillus (II.), and once with the streptococcus and the bacillus mucosus capsulatus (VI.). The staphylococcus pyogenes albus was found once with a non-pathogenic thread fungus (VIII.), and once with an unidentified bacillus (IX.).

In three cases the frontal sinuses were alone affected, the right sinus twice (V., XII.), and the left once (XV.). In one case (XVII.) the right antrum and the ethmoidal sinuses were also involved. In the first case (V.) the process followed a severe coryza. Twenty years ago there was intense frontal headache, most marked on the right side. After a few days spontaneous rupture occurred, and there has been a continuous discharge of creamy pus ever since. Several cubic centimeters of pus were obtained by aspiration through the fistulous tract. The right middle turbinal was hypertrophied at its anterior end, and the septum deviated slightly. There was no discharge of pus from the nostril. The other sinuses appeared normal. Cultures gave the staphylococcus pyogenes aureus and an unidentified non-pathogenic bacillus.

In the second case (XIII.) the patient, a girl aged eleven years, eighteen months ago had a severe attack of coryza. Since then there has been frontal headache, most marked on the right side, and a purulent discharge from the right nostril. Pus from the right frontal sinus contained the diplococcus lanceolatus in pure culture. In Case XV. the left frontal sinus was alone affected. The process was of long duration, and the abscess ruptured spontaneously. Pus obtained from the sinus contained the staphylococcus pyogenes aureus and the bacillus mucosus capsulatus. In Case XVII. with empyema of the right antrum there was inflammation of both the frontal and ethmoidal sinuses. From the antrum and the frontal sinuses the streptococcus pyogenes and the staphylococcus pyogenes aureus were obtained.

In Case XIV. there was empyema of both antra, and of the ethmoidal and frontal sinuses. The frontal sinuses contained pus and polypi. In the pus from the frontal sinuses, as well as from the other cavities, obtained several times, there was always found a streptococcus growing in short chains which slowly liquefied gelatin. This organism was not pathogenic for animals. The first three cases were instances of chronic empyema of the frontal sinuses, two of them following acute coryza. The ethmoidal sinuses were never found alone affected, but always in association

with antral empyema, and, with one exception, with empyema of the frontal sinuses as well. In Case VI. both of the antra and the frontal sinuses were involved (see above). In the material from the ethmoidal sinuses the streptococcus pyogenes was found. In Case XIV. both antra and the frontal sinuses were involved, and there again the streptococcus pyogenes was found in the ethmoidal scrapings. In Case VII. the process was associated with empyema of the right antrum following influenza, and in the pus the staphylococcus pyogenes aureus and the influenza bacillus were found. In the last case (XVII.) there was also empyema of both antra and frontal sinuses as well as of the ethmoidal sinuses. In the material obtained from the latter the staphylococcus pyogenes aureus and the bacillus pyocyaneus were found.

While in our experience primary inflammation of the frontal sinuses is not uncommon, we have never met with inflammation of the ethmoidal sinuses, except when secondary to, and accompanying inflammation of the antra either alone or in combination with inflammation of the frontal sinuses. Our material, except in the first case, which came to autopsy, has been derived from the living. The inflammatory process was well established in every case. In the affected antrum of Case I. there was a polypus, the cavity was filled with a thick pus, and the walls were congested and edematous. In the other cases the character of the pus varied. Usually, however, it was mucopurulent; not infrequently it contained fibrin, and in some cases it was thick and of a creamy appearance. As previously stated, tubercle bacilli and protozoa were never found. Besides bacteria and polymorphous nuclear leucocytes, which were present in varying numbers, in nearly every case large, swollen, flat, sometimes round, sometimes ovoid or even polygonal cells, epithelial in appearance, were seen. These cells varied in size, had oval or round vesicular nuclei, with finely granular protoplasm, and often contained large or small fat droplets. Occasionally they contained bacteria. These cells were found in the material from the antra and from the frontal and ethmoidal sinuses. Columnar epithelial cells were never seen. These swollen epithelial cells must have been changed and desquamated cells from the walls of the various cavities. In some cases these cells were very much more numerous than in others. Cases in which these cells are numerous, we are disposed to call catarrhal.

Death from Chloroform.—Professor Ryle, D.D., President of Queen's College, Cambridge, England, lost a child of eight years recently from the administration of chloroform.

YEAST NUCLEINIC ACID IN THE TREATMENT OF SEPTICEMIA, WITH REPORT OF CASES.[1]

BY WALTER COURTNEY, M.D.,
OF BRAINERD, MINN.;
CHIEF SURGEON, EASTERN DIVISION, NORTHERN PACIFIC R. R.

FOR the purposes of this article we will define septicemia as a general systemic invasion by one or more varieties of the pyogenic or putrefactive bacteria, their products, or both. There are but few forms of infectious disease which we dread more to meet, or fear more when met, than septicemia. The rapidity with which it proves so frequently fatal, and the fruitlessness, in such cases, of the most faithful, assiduous, and often heroic treatment, are enough to move our minds to anxiety and fear in the presence of such a relentless disease.

It has been my fortune during a good many years to be placed in a position which has compelled me to meet and treat many of these most undesirable cases. Railway men are peculiarly liable to badly lacerated and contused wounds, and in too many instances there occurs every opportunity for early infection. Often, time and distance and, necessarily, imperfect operations and dressings are elements of mischief which have accomplished much harm by the time the patient reaches the hospital. Treatment as laid down in text-books is often unsatisfactory; even though the patient recovers, the tissues around and about the wound where infection occurred may be left in an indolent and sluggish condition, rendering healing slow and difficult.

A year ago last winter I had the privilege of working in Dr. Vaughan's private laboratory at the University of Michigan, and while there observed his experiments with yeast nucleinic acid on rabbits and guinea-pigs which had been inoculated with the bacillus tuberculosis, bacillus tetani, and bacillus anthracis, each in different animals. The marked inhibitory, and frequently curative, effect of the nuclein treatment of these various infections, well measured in all by careful controls, made a deep impression upon my mind. After resuming my regular duties it was not long before I was confronted with the task of treating a severe case of septicemia. In considering the treatment I should pursue, I remembered the striking effects I had observed from the use of yeast nucleinic acid, and determined to try it, in conjunction with other remedies, in the treatment of my patient.

Nuclein is said to be distinctly germicidal, for certain bacteria at least. Whether its germicidal properties, when introduced into the living body, are wholly due to the promotion of leucocytosis, and

[1] Read before the St. Paul (Minn.) Academy of Medicine.

consequent phagocytosis or not, I am at this time unable to say. One thing seems to be certain, and that is that nuclein has no antitoxic properties. This has been demonstrated by Vaughan and McClintock in their series of experiments on rabbits and guinea-pigs with yeast nucleinic acid and the toxins of diphtheria and tetanus.[1]

The outcome of the case above referred to was most satisfactory, and I was inclined to believe the nuclein was deserving of some credit, and determined, when opportunity offered, to give it further trial. Up to the termination of my fourth case I was not aware that any one else had used yeast nucleinic acid in the treatment of septicemia. At this time I wrote to Dr. Vaughan inquiring if he had knowledge of any such application of the remedy, and asking him, if he had, to kindly refer me to the literature of the subject. His reply to my question was: "I am just sending to the publishers an article on nuclein in which is contained the following paragraph concerning its use in septicemia:

"Boise and Hofbauer have reported good results from the treatment of puerperal septicemia with nuclein, the former using my preparation, and the latter that of Horbaczewsky. Hofbauer states: 'Among the clinical symptoms which were observed during the course of treatment, the following may be mentioned:

"'1. *Effect upon the General Condition.*—This was manifested in a very marked and even surprising manner. Patients who previously lay apathetic and half asleep now gave a clear and satisfactory answer when questioned as to their condition. Though the temperature remained above the normal, nevertheless, the improved appearance and the calm expression of countenance offered a decided contrast to what had been previously observed. At the same time the icteric tint of the skin disappeared and the appetite was improved.

"'1. *Influence on the Local Condition.*—The puerperal ulcers soon took on a healthy appearance and healed. The discharges from the septic uterus rapidly lost their odor and purulent character, and lessened in quantity. The first dose increased the temperature, followed by a gradual decrease. The remissions were longer and more pronounced and the exacerbations slighter, until restoration to the normal resulted.'"

Following are the cases which I wish to report:

CASE I.—Nicola J., Italian, aged thirty-six years, laborer, of healthy appearance and well-nourished, was admitted to the Northern Pacific Hospital, Brainerd, Minn., at 5.30 P.M., May 31, 1896, for a severe gunshot wound of the arm which had been received twenty-four hours previously. At that time the wound had been cleansed and an antiseptic dressing applied. Our examination showed a large, ragged, and septic wound on the inner aspect of the middle portion of the left arm. Nearly two-thirds of the biceps had been destroyed, about two inches of the brachial artery and vein had been shot away, and the median and ulnar nerves were lacerated. The patient was somewhat exsanguinated and had a rapid and weak pulse, and his general condition was poor. The vitality of the hand and forearm was quite uncertain. Whisky and strychnin were given hypodermically. Under chloroform anesthesia, we tied the vessels, removed all dead and doubtful tissue, also a large quantity of bird shot, drained thoroughly, packed loosely with iodoform gauze, and enveloped the whole limb in a voluminous dressing. His temperature the same evening was 100° F. and pulse 140. The bowels were moved. Stimulants, in the form of strychnin, digitalis, and whisky, were freely given, and milk, egg-nog, and beef tea were taken frequently.

June 1st. Highest temperature, 100.4° F.; pulse, 140; systemic intoxication becoming quite marked. At 8.30 P.M. he was ordered 2 c.cm. of a one-per-cent. nuclein solution (Vaughan's) every fourth hour, hypodermically. Vomited twice during the day. Bowels moved. Administration of stimulants continued. Water and other fluids freely allowed. June 2d. Highest temperature, 100.6° F.; pulse, 120; skin sallow and conjunctivæ stained. Vomited twice. Bowels moved. Wound dressed. Same medication and diet. June 3d. Apparent improvement. Highest temperature, 100.4° F.; pulse, 114 and of improved quality. Face losing its sallow, drawn look. Not so restless. Wound dressed. Bowels moved. Same medication. June 4th. Patient markedly improved. Highest temperature, 100.8° F.; pulse, 108 and of still better quality. Some desire for food. Wound dressed. The use of nuclein discontinued. June 5th. Continued improvement. Highest temperature, 100° F.; pulse, 104.

From this time forward the patient was considered out of danger, but it was not until June 21st that his temperature reached normal and remained there. His pulse ranged between 84 and 100 for some time afterward. The limb was saved, but there was gangrene of the finger-tips. It was greatest on the little finger, destroying it completely as far upward as the last phalanx extended; it did not extend so far on the ring finger, still less on the middle finger, and only involved the skin over a small area of the index finger. This strange condition was doubtless due to the injury sustained by the nerves of the arm. Motor paralysis of these fingers still existed to some extent when the patient was discharged.

CASE II.—Enrico D., Italian, aged twenty years, laborer, of healthy appearance, was admitted at 4 P.M., September 2, 1896. Right leg had been amputated in middle third the day before for car-wheel injury. The whole stump was swollen and boggy.

[1] "The Physiological Action and Therapeutic Uses of Yeast Nucleinic Acid, with Special Reference to its Employment in Tuberculosis," THE MEDICAL NEWS, February 27, *et seq.*, 1897.

The flaps looked dark and unhealthy, and were distended by blood-clots. All stitches were removed, clots turned out, wound irrigated, packed with iodoform gauze, and an antiseptic dressing applied. Calomel purge. Highest temperature, 100.8° F., pulse, 96. September 3d. Highest temperature, 101° F.; pulse, 96. Wound dressed. Tissues red and glazed; parts of both flaps looked gangrenous. Patient restless. Saline cathartic. September 4th. Highest temperature, 102° F.; pulse, 94. Patient greatly depressed. Wound dressed twice; dry and glazed; slough black. Serous discharge. Nuclein 20 minims hypodermically, every fourth hour. September 5th. Highest temperature, 102.6° F.; pulse, 90. Wound dressed twice; stump a little less swollen and boggy. General condition slightly improved. Saline cathartic. Nuclein continued. September 6th. Highest temperature, 101.4° F.; pulse, 86. Wound dressed; purulent discharge. Patient more comfortable. Nuclein continued. September 7th. Highest temperature, 103° F.; pulse, 94. Wound dressed; purulent discharge. Nuclein continued. Cathartic given. Patient somewhat more comfortable. September 8th. Highest temperature, 101° F.; pulse, 74.

From this time on the patient did well and made a good recovery, so far as the general systemic results of infection were concerned.

CASE III.—Felix L., French-Canadian, aged twenty-eight years, engine-wiper, strong and well-nourished; good family history; was admitted October 29, 1896, suffering with diseased testicle. He stated that while at work on September 7, 1896, he slipped and fell astride of the hand-rail of a locomotive and injured his right testicle. Had had some medical attention. On examination, the right testicle and cord were found to be greatly enlarged, the former being very dense and hard in its upper portion and soft and fluctuating below, from which there was a sinus discharging thick, cheesy pus, mixed with glandular tissue. Temperature, 99.2° F.; pulse, 80. Urine normal.

On November 2d, the patient having been fully prepared for operation, he was anesthetized with chloroform, followed by ether and, after careful examination, it was decided that castration was indicated, which was done. Every precaution was taken to make the wound aseptic and drainage was provided for in the lower part of the scrotal wound. November 3d. Temperature, 101° F.; pulse, 88. Cathartic given. November 4th. Highest temperature, 103.8° F.; pulse, 100. Patient somewhat restless, but free from pain. Wound dressed; no redness or inflammation, but one or two sutures over inguinal canal removed for better drainage. Bowels active as result of cathartic. November 5th. Patient slept very little during night; is restless, but has no pain; sweating some and seems to be suffering from severe systemic intoxication. Wound dressed and found looking well; considerable serous discharge. Removed all sutures and packed loosely with iodoform gauze. Pilocarpin, hypodermically, and large quantities of water and other fluids were given. Highest temperature, 104.8° F.; pulse, 112. Nuclein, 2 c.cm. of a one-per-cent. solution, hypodermically, every fourth hour, was ordered. November 6th. Highest temperature, 104.8° F.; pulse, 110. Slept very little during previous night. Wound clean, but considerable drainage of serum. Microscopic examination of same was negative. No culture was made. All emunctories kept active. November 7th. Patient a little more comfortable and slept a little more during the night. Wound in good condition. Same medication and treatment. Highest temperature, 104.2° F.; pulse, 100. November 8th. Patient very much the same, except a little more comfortable. Same medication and treatment. Highest temperature, 103.8 F.; pulse, 106. November 9th. Patient passed a fairly comfortable night; general condition greatly improved. His temperature continued to fall all day and by evening was normal, as was the pulse. From this time forward his temperature and pulse never rose above normal, and progress and recovery were uneventful.

CASE IV.—Oscar N., Swede, aged twenty-three years, laborer, well-nourished, was admitted December 7, 1896, for injury of right foot, which had been crushed between a bumper and deadwood two days before. Examination showed injury to four smaller toes, two of which were completely crushed and had to be removed. Plantar surface burst open over ball of foot; lower two-thirds of dorsum badly lacerated and subcutaneous tissues greatly contused. Wound septic and evidence of systemic invasion. Temperature, 102.6° F.; pulse, 100. Wound treated antiseptically. Medication: Calomel, followed by saline; chlorodyn for pain; nuclein, 2 c.cm. of a one-per-cent. solution, every fourth hour, hypodermically. December 8th. Highest temperature, 102.8° F.; pulse, 108. Epistaxis. Wound dressed. Skin gangrenous on dorsal surface of foot to the extent of size of palm of hand. Foot put in continuous warm bath of 1-to-500 carbolic acid solution. Nuclein continued. December 9th. Highest temperature, 102.4° F.; pulse, 98. General condition improved. Nuclein continued. December 10th. Highest temperature, 101.° F.; pulse, 100. Epistaxis. Evidence of systemic intoxication less pronounced. Nuclein continued. From this time on there was a daily improvement, and on December 15th the use of the nuclein was discontinued. On this date his temperature reached 100° F., and his pulse 90. The patient made a good recovery.

CASE V.—W. F. F., Welsh, aged twenty-nine years, locomotive fireman, of healthy appearance, was admitted December 27, 1896, for gunshot wound of right forearm, received forty-two hours previously. A 44-caliber ball had entered just above the wrist and shattered the lower end of the ulna into a score or more of pieces and badly fractured the radius at its lower end. A local surgeon had carefully drained and dressed the wound. Soon after admission the wound was examined. The discharge was inclined to be purulent, and the hand and forearm were swollen. Every effort was made to render the wound aseptic. It was drained and loosely packed with iodoform gauze and dressings applied. Cathartic

and light diet ordered. Evening temperature, 98.4° F.; pulse, 84. December 28th. Wound dressed and condition about the same. Evening temperature, 98.8° F.; pulse, 90. December 29th. Wound condition same as day before. Evening temperature, 98.8° F.; pulse, 90. December 30th. Wound dressed; swelling almost gone, but discharge still doubtful. Temperature, 99° F.; pulse 80. December 31st. Wound dressed; not looking well. Highest temperature, 102° F.; pulse, 94. January 1st. Patient had a bad night; wound found very unsatisfactory. Chloroform was administered and wound freely opened. All necrotic tissue was removed. Thorough irrigation with bichlorid and pyrozone. Sterile iodoform was well rubbed in and the wound loosely packed with iodoform gauze and voluminous dressing applied. Highest temperature 103° F.; pulse, 104. Nuclein, 2 c.cm. of a one-per-cent. solution given hypodermically every third hour. Urinalysis yielded negative results. January 2d. Patient fairly comfortable. Very free catharsis. Highest temperature 102° F.; pulse, 90. January 3d. Highest temperature, 101.8° F.; pulse, 100. January 4th. Temperature, 102.2° F.; pulse, 96. January 5th. Highest temperature, 102.6° F.; pulse, 96. Saline cathartic ordered. January 6th. Highest temperature, 102.6° F.; pulse, 100. Blood count gave 10,125 white corpuscles to the c.mm. Nuclein every fourth instead of every third hour. January 7th. Highest temperature, 101.8° F.; pulse, 96. Wound dressed; seropurulent discharge. Forearm and hand somewhat swollen. Appetite poor and some nausea. Cathartic, which was effective. January 8th. Hand and forearm swollen more than day before. Counter opening made on back of hand for evacution of pus accumulation. Profuse perspiration. Progressive emaciation apparent. Highest temperature, 102.2° F.; pulse, 100. Ordered 10 minims of a five-per-cent. nuclein solution every fourth hour, instead of a one-per-cent. solution. January 9th. Wound dressed twice, dressings being wet with solution of potassium permanganate. Large amount of purulent discharge. Swelling increasing and extending above elbow. Profuse perspiration. Skin sallow. Bowels active from salines. Highest temperature, 104.4° F.; pulse, 120. January 10th. Wound dressed twice. Profuse purulent discharge. Whole limb greatly swollen. Red lines in skin, indicating lymphangitis. Hand and arm placed in 1-to-500 carbolic bath at a temperature of 100° F. Patient vomited. Profuse perspiration. Sallowness of skin well-marked. Highest temperature, 103.4° F.; pulse, 112. Symptoms of osteomyelitis constantly increasing. Whisky, strychnin, and digitalis, which had been given during previous three days, ordered increased.

January 11th. The degree of systemic poisoning was so great, and the osteomyelitis so well marked, that it was decided that amputation should be performed at once. This was done at about the middle of the forearm. The periosteum was swollen and softened and stripped from the bones in retracting the muscles; the medulla of the ulna was diseased quite up to the point of section. In the radius the internal conditions were more favorable. No sutures were used in the flaps, which were packed with iodoform gauze. No marked shock from anesthetic (chloroform followed by ether) or operation. January 12th. Patient slept fairly during preceding night and was quite comfortable. Highest temperature, 101.8° F.; pulse, 100. Wound not disturbed. January 13th. Patient doing well. Wound dressed; free drainage. Highest temperature, 100.2° F.; pulse, 96. January 14th. Patient doing finely. Wound not dressed. Some appetite. Bowels moved by cathartic. Highest temperature, 100.4° F.; pulse, 88. Nuclein discontinued. From this time forward patient did well. February 1st. Blood count showed white corpusules 6333 to the c.mm. Patient going about out of doors and general condition is excellent, but stump has not closed on account of a limited necrosis of ends of both bones.

CASE VI.—The following history was furnished by Dr. T. N. McLean of Fergus Falls, Minn.: Merrian A., aged six years, a well-nourished, healthy-looking child of good family history. Was called to see him December 23, 1896, at 11.30 A.M. Found both feet badly crushed and lacerated from freight cars having passed over them. The tissues of the left leg were lacerated and torn half way up to the knee. Fracture of bones of foot but not of leg. Some of the bones of the right foot were fractured. Patient was chloroformed, loose pieces of bone removed, wound thoroughly cleansed with bichlorid solution, sutured, and dressed with iodoform and iodoform gauze. At 4 P.M. the patient was very weak. Temperature, 98° F.; pulse, 150. Extremities cold and bathed in cold sweat. Gave strychnin, $\frac{1}{60}$ gr., and brandy, hypodermically, every third hour. Gave normal saline solution per rectum. December 24th., A. M., patient very restless all night; very delirious; picked bed-clothes constantly; had not rallied from shock. Temperature, 98° F.; pulse, 150. Extremities cold. No vomiting. Eleven P.M. Temperature, 102° F.; pulse, 150. Very restless and delirious. Bowels moved by enema. Would not take nourishment. December 25th. Temperature 103° F.; pulse, 150. Very restless all night; profuse sweating; delirious all the time; would not take nourishment. Removed dressings and reapplied fresh ones. December 26th. Temperature 103.4° F.; pulse, 150. Very restless; marked subsultus; delirious all the time. Took about four ounces of milk during previous twenty-four hours. Moved bowels by enema. Gave purgative. December 27th. Condition same as yesterday. Dressed wounds; found right foot looking fairly well. Left leg looked erysipelatous on inner aspect all the way up to the knee. Outer surface over crushed area was gangrenous. Dressed both limbs with hot bichlorid solution, 1 to 4000, and covered with oiled silk. Six P.M. Temperature, 104° F.; pulse, 150. Reapplied hot bichlorid dressings.

December 28th, 10.30 A.M., Dr. Courtney in consultation. We found patient with a temperature of 103° F., and pulse of 156. Skin yellow and perspiring. There had been diarrhea all of the pre-

vious night. Examination of the wounds showed the left foot and leg to be gangrenous almost halfway to the knee; right foot gangrenous almost to ankle; tissues emphysematous and infiltrated with pus. Dr. Courtney amputated both legs, the left one at the middle of middle third, the right at junction of lower and middle thirds. The vessels were tied, flaps packed with iodoform gauze (no sutures), and voluminous dressings applied. Strychnin $\frac{1}{60}$ of a grain, brandy 1 ounce, and 10 minims of a one-per-cent solution of nuclein given every third hour, hypodermically. Morphin, $\frac{1}{8}$ of a grain, was given whenever necessary.

6 P.M. Patient resting well. Temperature, 101° F.; pulse, 140. December 29th. Temperature 100° F.; pulse, 140. Patient quite rational; taking some nourishment; no subsultus. Slept fairly well. December 30th. Temperature, 100° F.; pulse, 130. No pain, no delirium, no subsultus. Dressed wounds; found them perfectly healthy; very little discharge and no pus. December 31st. Temperature, 99.5° F.; pulse, 130. Had a good night and no pain. Patient took nourishment fairly well. January 1st. Temperature, 99.5° F.; pulse, 130. Dressed wounds and found them quite clean. Stitched right stump. January 7th. Temperature, 98.4° F.; pulse, 120. Right stump practically healed. Stitched left stump. Stopped nuclein solution; continued small doses of strychnin. Appetite good. Bowels regular. January 25th. Temperature, 98.4° F.; pulse, 100. Right stump entirely healed one week ago; left stump practically healed. Patient is gaining in flesh every day. Crawls all over the house.

CASE VII.—E. L. E., American, aged twenty-eight years, laborer, a very strong and healthy man, was admitted February 5, 1897, for severe crushing injury of right hand and wrist; no bones broken. Injury had been received thirty hours previously by having had the hand caught between cars. Soon after injury, hand had been cleansed, drainage introduced, and moist dressing applied to reduce swelling. After admission, temperature was found to be 100.8° F., and pulse 96. The hand was thoroughly cleansed and the wounds irrigated, drained, and dressed antiseptically. Saline cathartic given and free catharsis resulted. February 6th. Patient fairly comfortable; wound dressed. Evening temperature, 99.4° F.; pulse, 80. February 7th. Patient not nearly so well; more swelling in hand and arm; vomited twice. Hand was put in warm bath of 1-to-500 carbolic acid solution. Evening temperature, 103.4° F.; pulse, 120. Yeast nucleinic acid, five-per-cent. solution, was given in 10-minim doses, hypodermically, every third hour. Strychnin, gr. $\frac{1}{32}$ every fourth hour. Calomel, followed by saline purge. February 8th, A.M. Temperature, 101.8° F.; pulse, 110. Hand very painful; swelling extended almost to elbow. Hand taken out of bath and put in dry dressing for few hours. Bowels moved twice. Skin and conjunctivæ but little stained. Nuclein continued. Morphin for relief of pain. Strychnin, whisky, and digitalis, every fourth hour. Evening temperature, 102.8° F.; pulse, 104. February 9th. Patient grew rapidly worse during the night; became delirious, and temperature went up to 104° F., and pulse to 140. Stimulants were increased. Enteroclysis of normal salt solution at 100° F. Later, intravenous injection of normal salt solution also. Profuse perspiration and severe rigors. All efforts failed to beget improvement. Patient became semi-unconscious and died at 9 P.M., a little more than four days after admission, and a little more than five days after being injured. The arm was never swollen above the elbow, and no pus appeared in the tissues or wounds. No autopsy was obtainable.

CASE VIII.—Allen C., aged eighteen, American, laborer, admitted February 26, 1897, with croupous pneumonia of lower lobe of left lung, from which he had been suffering during three weeks. Evening temperature, 100.4° F.; pulse, 96; respiration, 34. Patient was emaciated and much exhausted. Careful attention directed to the emunctories; stimulants and easily digestible and nourishing food ordered. For about a week there was no improvement. The pulse became somewhat slower but was very irregular, doubtless caused by a greatly dilated stomach. The intestines also were greatly distended with gas, causing very severe colic. After this, for four or five days, the general condition was considerably improved; the temperature was but little above normal, the pulse ranged between 80 and 100, and the respiration between 20 and 28.

About March 9th the patient's condition again became worse. Evening temperature, 102° F.; pulse, 112. Well-marked symptoms of septicemia present. Stomach irritable; some vomiting. Skin presented a dull and icteric appearance. Nuclein, in ½-dram doses, of a five-per-cent. solution, by mouth, every third hour, added to other treatment. March 10th. Left pleural cavity aspirated and pus found. March 11th. Resected seventh rib, external to axillary line, and evacuated quite a quantity of pus and coagulated fibrin. March 12th. Temperature normal, pulse, 98. Free perspiration and great prostration. Examination of pus from the pleural cavity showed the presence of the micrococcus pneumoniæ croupose in abundance. Nuclein discontinued two days later.

For more than a week following, the condition of the patient was extremely critical, then improvement began and was rapid. On April 8th the patient was about the house, and only a small sinus at the site of operation remained, from which there was scarcely any discharge.

CASE IX.—John P., Italian, aged twenty years, laborer, admitted March 17, 1897, three days after injury. Compound fracture of left leg at junction of middle and lower thirds. The leg had been very severely injured between cars. There was a large open wound over and down to the tibia (which alone was fractured) and the tissues were torn and lacerated, mostly subcutaneously, from the malleolus half way to the knee on the outer side of the leg. In addition to these, there were other open wounds of the skin. The ends of the bone had been trimmed

off and placed in good position and an antiseptic dressing applied by the local surgeon. Evening temperature on the day of admission, 100.2° F.; pulse, 130. Patient was plainly suffering from general systemic poisoning. Leg dressed; hematomata evacuated and a voluminous aseptic dressing applied. Cathartic given. Strychnin gr., $\frac{1}{32}$, and 15 minims of a five-per-cent. yeast nucleinic acid solution, given hypodermically every fourth hour. March 18th. Patient very restless and general condition very poor. Wound dressed; very free discharge of serum. Enteroclysis of normal salt solution. Nuclein increased to twenty minims every fourth hour; water given freely and emunctories kept active. Evening temperature, 100.8° F.; pulse, 136. March 19th. Patient more comfortable. Wound dressed; free serous discharge. Vomited once during the day; bowels moved several times. Temperature, 100° F.; pulse, 110. March 20th. Patient passed a comfortable night and was considerably improved. Wound dressed; less discharge. Temperature, 100.8° F.; pulse, 108. March 21st. Patient still improving; appetite returning; wound looking well. Temperature, 100.4° F.; pulse, 102. Nuclein discontinued. From this time on the patient improved very rapidly, and on March 31st his temperature reached normal and his pulse, 70. With the improvement in the general condition the wounds began to heal rapidly and have continued doing so ever since.

CASE X.—V. H. E., American, aged thirty-seven years, bridge foreman, admitted March 26, 1897. While working on a railroad bridge, thirty-one hours previously, the patient fell twenty feet, on to ice and stones, and received a fracture of the tarsal bones of the right foot. There was severe contusion of the foot and lower half of leg, with laceration of the skin and subcutaneous tissues over the outer malleolus as well. There was also some slight contusion of the right chest, but no fractured ribs. Temperature, 101° F.; pulse, 78. Wound was dressed and foot elevated. Cathartic administered. Nuclein was given in 15-minim doses, hypodermically, every fourth hour, and light diet ordered. March 27. Patient feeling quite ill. Bowels moved. Same medication. Temperature, 101.8° F.; pulse, 84. March 28th. Patient about the same. Had some bronchitis, with considerable cough. Temperature, 102.6° F.; pulse, 88. Leg greatly swollen and painful, but no evidence of suppuration. As we were more strongly impressed than before that sepsis was present, the nuclein was continued, hypodermically. No local reaction from its use. Calomel purge. March 29th. Bowels moved. Condition of foot and leg the same. Annoying cough, but no evidence of pneumonia could be found. Temperature, 102° F.; pulse, 96. March 30th. Wound dressed; local condition unchanged; no suppuration. Temperature, 101.8° F.; pulse, 80. Same medication. The patient remained about the same, with an evening temperature of about 102° F., and pulse of 80, until April 5th. At this time both began to improve and within two days were normal. The swelling disappeared from the foot and leg, and a plaster cast was applied. There was no suppuration at any time. At the present time, April 10th, the patient has a very good appetite and is about the house.

In addition to these cases, I know personally of two others which were successfully treated with nuclein, but I am not in possession of such clinical notes as will enable me to write them up in detail at this time. Both of them occurred in the practice of my late assistant, Dr. S. M. Kirkwood, now of St. Paul. They were very severe and exceedingly dangerous cases, and, for a time, both lives were despaired of. In one, the infection was introduced through face and mouth wounds, and the local lymph-glands were greatly indurated and enlarged. In the other, infection occurred through the avenue of a lacerated wound of the little finger. There was suppurative tenosynovitis, and the hand and forearm had literally to be riddled with drainage openings. The arm, as well as the patient's life, was saved.

The recital of these cases has been lengthy, and perhaps tedious, but to fully weigh and value the results of a new treatment all the principal facts ought to be worthy of consideration. From the histories given there can be no question as to their severity and seriousness, and the imputation of simple surgical fever to any would not be consistent with their clinical manifestations. To say that some may have been cases of sapremia would simply be begging the question, in view of the definition with which this paper was begun. But, in order to avoid argument with the pathologists, we may justly claim that sapremia may be fatally serious.

Passing some of these cases in review, it will be seen that Case VIII. (empyema), on superficial inspection apparently differs rather widely from the others and may seem out of place among them, and, in consequence, that the application of the nuclein treatment might appear rather unwarranted. In answer, I may say we know quite well that the micrococcus pneumoniæ crouposæ is quite frequently found in other localities than the chest, and in connection with inflammation and suppuration of tissues and other organs elsewhere. It may induce septicemia. Flexner, in his excellent paper on "The Study of Terminal Infections," says, in considering the general infections: "Not infrequently a local lesion, such as erysipelas, acute peritonitis, or acute endocarditis, exists which antedates the general invasion of the body by the infectious agent."[1] In Case VII., which resulted fatally, administration of the yeast nucleinic acid was not begun as early as it should have

[1] "Transactions of the Association of American Physicians," 1896.

been. During the first two days after admission, it was thought the symptoms were due to irritation from the painful contusion and laceration of the hand rather than to serious microbic infection. After this the disease seemed wholly irresistible. That I permitted the proper time to pass before resorting to the use of a remedy, which by this time had gained a place in my confidence, is a matter of deep regret to me.

Among the striking results of the treatment in this list of cases I might mention, first, the promptness with which the general health was restored after convalescence had begun, and, second, the readiness with which the injured tissues, which had furnished the infection atrium, healed, this being very noticeable in all except in Case II. In this case the general health improved very rapidly, but the tissues of the stump remained for a long time sodden and very indolent. These results are in decided contrast to my previous experience in the treatment of septicemia, that is, before using the yeast nucleinic acid. Then convalescence in a great many of the patients who recovered was slow; the pulse would long remain rapid and weak, the skin sallow and dull, and the nervous system considerably shaken. The treatment of the local condition, too, where injury and infection occurred, would often tax one's patience and ingenuity to the utmost.

In regard to the auxiliary treatment of these cases, I presume there will not be wanting those who will ask if this alone would not have accomplished the results obtained. I must in honesty admit that it might possibly have done so. On the other hand, with equal candor, I am compelled to say that no other form of treatment previously employed by me ever yielded, in anything like the same number of cases, such satisfactory results. It is true, of course, that the number of cases treated with yeast nucleinic acid is not convincingly large; still, I am encouraged to persevere with it, and with a considerable feeling of confidence.

In my opinion the most valuable forms of auxiliary treatment are those which will effect free elimination by all of the emunctories that may be pressed into service, so as to rid the system of all the toxins possible. This is important because it not only acts on the direct source of danger (the toxins), but often obviates or mitigates another ever-present danger, *viz.*, auto-intoxication. After this I would place the free but judicious use of stimulants, among the best of which are strychnin and whisky. The proper administration of food will at all times receive attention at the hands of the careful clinician.

As regards the use of yeast nucleinic acid in septicemia, there are several points to which I wish to invite attention:

1. It should be given at the earliest possible moment that septic infection is suspected. One should not wait for the typical and classic symptoms as given by text-books. My observations have taught me to believe that if one waits until rigors, icterus, diarrhea, delirium or apathy, profuse perspiration and a foul-smelling and discharging wound are added to an abnormal increase in temperature and pulse-rate and a restless alertness on the part of the patient, to convince him that it is septicemia that must be dealt with, instead of surgical fever or something else, he has been guilty of a serious waste of most valuable time.

2. The nuclein should always, in septicemia at least, be given hypodermically, if possible, in order to secure prompt action of the given dose. If the one-per-cent. solution is used, at least 30 to 40 minims, undiluted, may be given every three or four hours. If the five-per-cent. solution should be used, from 10 to 15 minims may be given every three or four hours, but ought to be diluted with distilled or at least with sterile water. This is necessary to avoid the local reaction which is sometimes caused when this solution is given undiluted. In my experience, the five-per-cent. solution is preferable, for one reason at least; it is always stable. The one-per-cent. solution is not stable; it sometimes becomes cloudy and unfit for use, even before the bottle containing it is opened.

If it be true, as Wells states,[1] that leucocytosis is to be regarded as a local condition, then injection of the nuclein ought to be, in the early stage, as near to the place of primary infection as possible. I have invariably made the injections into the cellular tissue and muscles of the chest.

3. The injection region should be examined daily in order to determine if local reaction can have anything to do with the patient's increased temperature and pulse-rate. If it has, it is due to one of two things: either to insufficient dilution of the 5-per-cent. nuclein solution, or to imperfect preparation of the skin or syringe.

I wish I could have added the results of thorough laboratory study to each of these most interesting cases, but neither my time nor that of my assistants was available for prolonged work of this kind. Though it is probable that before long the exact status of the remedy, and the *rationale* of its action will be satisfactorily explained. The following simple conclusion is the only one I shall offer at the present time: The results of my work with yeast nucleinic acid in septicemia are sufficiently encouraging to justify a feeling of confidence and a continuance of its use.

[1] "Leucocytosis and Immunity, with a Critical Analysis of the Theory of Nuclein-Therapy," THE MEDICAL NEWS, October 17, 1896.

CLINICAL MEMORANDUM.

REPORT OF A CASE OF INTRADURAL SPINAL TUMOR EXTENDING THROUGH THE FORAMEN MAGNUM, COMPRESSING THE EXTREME UPPER PORTION OF THE CORD, AND ALMOST COMPLETELY DESTROYING IT AT THE THIRD CERVICAL SEGMENT.[1]

BY J. T. ESKRIDGE, M.D.,
OF DENVER, COL.;
NEUROLOGIST TO ST. LUKE'S HOSPITAL; PRESIDENT OF THE STATE BOARD OF COMMISSIONERS FOR THE INSANE ASYLUM.

I WISH to express my indebtedness to Dr. Francis McNaught for the privilege of seeing and studying the following interesting case:

G. B. G., male, single, aged fifty-two years, white, born in New York State, a bridge-builder and miner by occupation, was first seen by me in consultation with Dr. McNaught in St. Luke's Hospital, March 2, 1897. His family history was negative, so far as I was able to learn. The patient had suffered from the usual diseases of childhood, from typhoid fever at his seventh year, and from malarial (intermittent) fever for seven months each year, from 1872 to 1879. He had possessed a strong constitution, had worked very hard, lived irregularly, exposed himself a great deal to inclement weather, and at times drank to excess. About twenty years ago he contracted syphilis, but did not suffer from any of the secondary symptoms of this disease. He had suffered from gonorrhea twice. Seven years ago he was "leaded" while working in an ore-sampling room. The lead poison developed suddenly, and he was delirious for some time. The blue line was found on the gums, but he did not suffer from colic or constipation.

He enjoyed very good health from 1890 till May, 1896, when his present trouble was first apparent to him. The first thing to attract his attention was his inability to strike a drill firmly and with his accustomed precision. Loss of power and dexterity in his hands and arms gradually became more marked, until, at the end of a month or two from the time when his attention was first attracted to his trouble, he had to change the character of his work. About the time that power was first impaired in his arms and hands he noticed a numb, cold, and full sensation in these parts, beginning first in the hands. At times he suffered from excrutiating pains in the shoulders and arms. Soon the legs became affected similarly to the arms, but the right leg was more helpless than the left. He did not remember the order in which the sensory and motor symptoms developed in the arms and legs. Whether early in the disease sensation was more affected on one side and motion on the other, he could not definitely recall. From June to October he was taken from place to place and treated by several physicians for syphilis. When the legs became almost completely paralyzed, which was some time in September, 1896, he lost all voluntary control of the sphincters of the bladder and bowel. His urine had to be drawn, but he did not soil his clothes if the bladder was regularly emptied by means of a catheter.

In October, 1896, he came to Denver and entered St. Joseph's Hospital. He remained there until February 19, 1897. During this time he was not critically examined by any one, but was treated for syphilis. Dr. Devlin, who saw him a number of times, tells me that his left leg and arm were more helpless than the right, but that sensory disturbance was greater on the right side than on the left.

I made a careful examination of his condition on March 2, 1897. I found him lying in bed, completely helpless. He had to be fed, but could sit for hours at a time if supported in a reclining chair. He had lost all control of the sphincters of the bladder and bowel and was greatly emaciated. He complained of great pain in the region of the bladder. He suffered from pain in the limbs and from spasmodic contraction of the muscles of the arms and legs. The pains started in the shoulders and ran down to his hands, and in the hips and extended downward to the feet. During the attacks of muscular contraction the hands and arms were frequently in forced extension, and the legs, at the hips and knees, in extreme flexion; at other times the legs were rigidly and painfully extended, with well-marked plantar flexion of the feet. The pain and muscular contraction would continue until relieved by a hypodermic injection of morphin, and would return as soon as the influence of the sedative had worn off.

The shoulder, arm, and hand-muscles were completely paralyzed and greatly atrophied. He could slightly flex and extend the legs at the knees and hips. All power of motion was lost at the ankles. The muscles of the legs were not greatly wasted. The neck muscles were very weak. He could rotate the head slightly, but could scarcely raise his head from the pillow. The posterior cervical muscles were a little stronger, so that he had little difficulty in holding his head erect if he were held in a sitting posture. The trunk muscles were almost completely paralyzed. The tongue was protruded in the median line; he could open and shut his mouth with considerable force, and none of the facial or ocular muscles were affected. The knee-jerks were both decidedly increased. All the other deep reflexes, including those of the arms, were absent. All the superficial reflexes were abolished.

Tactile Sense.—Anesthesia to a camel-hair pencil in motion was absent anteriorly from the lower border of the inferior maxillary bone downward; laterally from the lower border of the mastoid bones downward, and posteriorly from the fourth cervical spine downward. There was an area on the posterior surface of the neck, extending about two inches laterally from the spinous processes on either side from the fourth cervical spine upward to the scalp, over which the simple contact of a feather or a camel-hair pencil could readily be felt. Sensation over the entire scalp, face, and ears was normal.

Pain Sensation.—This was present, although perverted and delayed throughout the trunk and legs. It was less acute than normal, and greatly delayed in the legs, fairly

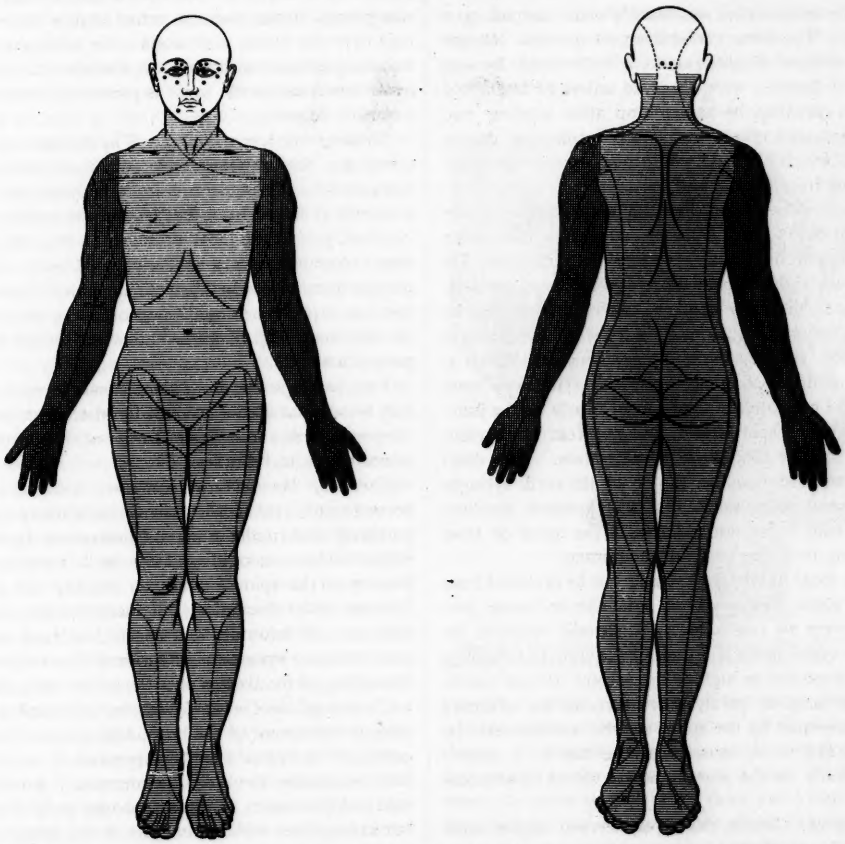
[1] Read by title before the Section on Neurology and Medical Jurisprudence, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1, 2, 3, and 4, 1897.

acute over the trunk, external genitalia, hips, and around the anal region. The increased time required to recognize the prick of a sharp point over these areas was well pronounced. Over the hands, arms, and shoulders it was nearly abolished. Over the extreme upper portion of the chest and over the anterior and lateral aspects of the neck it was very acute, but delayed. In those regions in which tactile sense was normal, the face, scalp, and posterior upper portion of the neck, pain-sensation was normal.

Temperature Sensation.—Cold substances, such as bottles containing water at about the temperature of 60° F., gave rise to a burning sensation in the feet, to no sensation over the legs and external genitalia, to a decided sensation of pain over the abdomen and lower portion of the chest, to almost no sensation over the middle third of the chest, and to a sensation of warmth in the upper third of the chest. Over the neck anteriorly, from the clavicle to the lower border of the inferior maxillary bone, cold substances gave rise sometimes to a sensation of cold, and at other times to a sensation of heat. Posteriorly, over the upper portion of the neck, cold substances were recognized as such. Over the hands, cold substances gave rise to a sensation of burning pain. Over the arms and shoulders the contact of these was not felt.

Heat.—Anteriorly, a bottle containing water at a temperature of 140° F. gave rise to no sensation until the lower border of the inferior maxillary bone was reached. Posteriorly, heat sensation from the fourth cervical spine downward was lost. Cool substances at a temperature of about 90° F., and warm ones at a temperature of 100° F., gave rise to no sensation in any portion of the body or limbs over which tactile sense was absent. (See Fig. 1.) Pressure, posture, joint, and localization sensations were absent throughout the area of tactile anesthesia.

FIG. 1.



Horizontal lines denote loss of tactile and temperature sense. Vertical lines denote partial loss of pain and sensation.

Eyes.—Vision, fields, discs, and fundi were normal. Smell and taste were present and equal on the two sides.

Hearing.—Watch: R., $\frac{12}{12}$; L., $\frac{4}{12}$. He thought that he heard the tuning-fork better with the right ear. He had been partially deaf in the left ear for a number of years.

In the legs and abdomen he had a full, dead, and painful sensation. In the chest, up to the clavicle, there was

a drawing or constricted feeling. The skin over the neck anteriorly appeared to him as though it were covered over with collodion, and deeper in there was a sensation of pressure. The arms felt as though they weighed a ton, and were the seat of almost constant pain. The spine was not tender to pressure except in the upper cervical region. Forced movements of the arms or of the head from side to side or forward gave rise to pain in the upper cervical region. Carrying the head backward did not cause him pain. The electric reactions of the muscles of the arms and neck were not tested, on account of his feeble condition and the constant pain from which he suffered.

The bodily temperature was usually about normal or a little below. The pulse varied from 70 to 100. Respiration was entirely diaphragmatic, a little rapid, but no symptoms of dyspnea were observed unless he attempted to talk. In speaking, he had to stop after uttering two or three words and take a long, deep inspiration, during the effort at which his head would involuntarily be completely raised from the pillow.

Diagnosis.—The history that the patient gave of the development of his symptoms served to confuse rather than to enlighten one in the investigation of the case. He stated that the right leg was more affected than the left. Dr. Devlin, on the other hand, is confident that when he saw him in October, 1896, his right leg was much stronger than the left. At the time of my examination, March 2, 1897, a short time before his death, all symptoms were bilateral, and consisted in abolition of nearly all the functions of the entire spinal cord, and in great impairment of those intimately concerned in respiration. The diagnosis lay between myelitis, tumor of the cord, syringomyelia, cervical pachymeningitis, and pressure myelitis, the compression being due to caries of the spine or from tumor arising from the bones or membranes.

Myelitis, focal in character, could not be excluded from the history alone, as this was so indefinite and some portions of it were so conflicting. A chronic myelitis, involving the upper cervical region of the cord and destroying tactile sensation as high as the second cervical nerve, with almost complete paralysis of nearly all the voluntary muscles innervated by the spinal nerves, and attended by marked wasting in the muscles of the hands, is incompatible with life, as the phrenic nerves would be seriously affected.

Tumor of the Cord in the upper cervical region sufficiently large to produce bilateral symptoms as grave as those existing in this case, like myelitis, would rapidly result in death.

Syringomyelia might, and sometimes does, give rise to most of the symptoms found in the case under discussion. The muscular wasting of the arms and hands, the disturbance in sensation as high as the lower border of the inferior maxillary bone, the paralysis and the increased knee-jerks might be produced by syringomyelia. In syringomyelia the pain is rarely as severe as it was in this case, and is much less influenced, if influenced at all, by movements of the limbs or by changing the positions of the body. In this patient's case the pain was so great, especially in the arms, as to require repeated injections of morphin to make life tolerable, and movements of the arms or head, thus putting the neck muscles on the stretch, as when turning the patient in bed, could not be made without giving rise to great suffering. In addition to the severity of the pain and the manner in which it was increased, the most important evidence against the existence of syringomyelia was the way in which sensation was affected. Tactile sense was abolished throughout the area of the distribution of the spinal nerves, except over a small surface on the back of the neck above the fourth cervical spine, over the posterior portion of the scalp, and over a small area of the face. Pain sensation, although delayed, was present throughout the entire surface of the body except over the hands and arms. In syringomyelia, pain and temperature sensations are abolished to a greater or less extent, and tactile sense is preserved, often to nearly a normal degree.

Cervical Pachymeningitis.—The character of the initial symptoms, loss of power, incoordination, numb and dead sensations in the hands and arms, without much pain, is decidedly different from that of cervical pachymeningitis, in which pain is the most prominent symptom for some time. Paralysis is not an early symptom in meningitis, neither does it become absolute until just before death. Besides, a pachymeningitis causing anesthesia throughout the distribution of all the spinal nerves would be incompatible with life.

Pressure Myelitis from some cause seemed to be the only lesion that would account for the symptoms. Was the pressure due to caries or tumor of the vertebræ, or to tumor of the membranes?

Caries of the Cervical Vertebræ, with deformity and pressure upon the cord, may cause sensory and motor paralysis, but under such circumstances there will be spinal tenderness, rigidity of the neck muscles, and deformity of the spine. Muscular rigidity was present in the case under discussion, but there was no spinal tenderness, and all deformity was absent; in fact, one of the most common symptoms of caries of the cervical spines—thickening of the tissues over the spine—was absent.

Tumor of the Cervical Vertebræ is attended by great pain on movement of the head, and all the symptoms of caries of the bones would be present in an aggravated form, especially the spinal tenderness. After a careful study of the history of the case, so far as it could be obtained, together with an analysis of the symptoms, I felt confident in excluding all lesions except tumor of the membranes, especially of the dura.

Tumor of the Membranes usually gives rise to motor symptoms on the side on which the tumor is located, and to sensory symptoms on the opposite side of the body; but in those cases in which the growth is situated high up in the cervical region, especially if the structures found in the foramen magnum are encroached upon, bilateral motor and sensory symptoms might result from the direct pressure of the tumor upon the cord and by displacement of the cord to the opposite side against the foramen magnum. A tumor located anteriorly or posteriorly to the spinal nerve-roots as they emerge from the cord might

give rise to bilateral sensory and motor symptoms without completely destroying the function of the upper cervical spinal nerve-roots. If, on the other hand, the growth should be situated on one lateral aspect of the cord, so as to directly involve the spinal nerve-roots on that side, bilateral symptoms would result in the cord below the site of the tumor on account of the direct pressure of the tumor against the cord and the displacement of the cord to the opposite side against the foramen magnum, but nerve-root symptoms on a level with the tumor would be more extensive on the side corresponding to that on which the tumor is located. As this difference of spinal nerve-root symptoms between the two sides was absent in this case, the tumor was thought to be situated anteriorly or posteriorly to the spinal nerve-roots.

Could all the symptoms present in this case be accounted for by the presence of a growth in the upper cervical region in the vicinity of the foramen magnum? Neither severe spinal tenderness nor deformity would result from a tumor in this situation, but muscular rigidity, paralysis, and loss of sensation would be likely to occur. These phenomena correspond with the symptoms found in the case here reported.

Location of the Tumor.—This patient had nearly normal sensation throughout the distribution of the cutaneous branches of the great and small occipital nerves and the great auricular branches of the cervical plexus. Tactile sense over the upper posterior portion of the neck, over the posterior portion of the scalp as far forward as the vertex, over the posterior surfaces of the pinnæ of the ears, and over the face just in front of and below the ears, is supplied by the first, second, and third cervical nerves. The lateral and anterior surfaces of the neck derive their cutaneous nerve-supply from the superficial branches of the cervical plexus, which is composed of nerve-filaments from the second and third cervical nerves. It will be observed that the function of the first cervical nerve was nearly intact, but that of the second and third cervical nerves was destroyed, so far as the superficial cervical filaments were concerned. Over the upper posterior portion of the neck and over the scalp both sensory and motor function were preserved to a fair degree. The muscles of the ears supplied by the upper cervical nerves moved freely. It was evident that the tumor was connected with the membranes, probably the dura, and was situated sufficiently high in the spinal canal to cause bilateral symptoms by displacement of the cord against the sharp edges of the foramen magnum. That it extended through the foramen magnum could not be determined.

Dr. McNaught accepted my diagnosis, and said that he would operate if I urged it, but he thought the man was too weak to undergo a severe operation. To this I entirely agreed, as the chances were that the patient would die on the table during the operation. He was extremely weak, greatly emaciated, took but little food, and had to be kept under the influence of morphin most of the time. He gradually sank, and died on April 1st—about four weeks after the examination.

Sectio Cadaveris, four hours after death. We were limited by the friends in our *post-mortem* examination to the spinal column and the cord and its membranes. No tumor, caries, or displacement of the bones was found. On exposing the dura from the sacral region to the foramen magnum, its external surface appeared normal, but at its extreme upper portion, at the foramen magnum, and extending an inch or more below, it was greatly distended. On opening the dura throughout its entire exposed posterior surface, a growth as seen in Fig. 2 was exposed.

The tumor was lobulated in character, seemed quite firm, lay on the right posterolateral surface of the cord, and was attached to the inner surface of the dura over an area about one-fourth of an inch in diameter. It extended from the fourth cervical nerve-root through the foramen magnum just into the cavity of the cranium. In size it was 1¾ inches in length by three-quarters of an inch in its greatest diameter, which was found to be just below the

FIG. 2.

Showing the tumor and cord *in situ* after removal of the laminæ, spinous processes, and posterior surface of the dura.

foramen magnum. The end of the tumor that extended into the cranial cavity was rather small and conical in shape. The membranes of the cord seemed to be normal except at the point of attachment of the growth, where the inner surface of the dura was a little thickened. The medulla was cut across just above the tumor, which was a little below the calamus scriptorius, and the cord was carefully removed from the canal. It was found that the cord had two indentations, one on the side of the growth extending from the fourth cervical nerve-root to the second, with the greatest depression opposite the third cervical nerve-root, the other on the left side, and a little more anteriorly than that of the right side.[1] The depression on the left side of the cord was caused by the displacement of the cord against the foramen magnum. The displacement of the cord was upward and to the left, so that the great indentation was on a level with that of the right

[1] The nerve-roots had not been directly pressed upon by the tumor or edge of the foramen magnum.

side, or at a point corresponding to the third cervical nerve. On marking the cord into sections about three-quarters of an inch in length, by incompletely cutting across its substance, the upper cervical portion seemed narrow and softened.

The cord and tumor were placed in Müller's fluid, and the fluid changed twice each day for four days. At the end of this time the specimens were put in a five-per-cent. solution of formalin and kept thus for three weeks. The microscopic examination of the specimens was made by Dr. E. R. Axtell, pathologist to the Hospital, and is as follows:

Sections were made of the tumor and of the spinal cord at the level of the first, second, third, and fourth cervical segments; at the mid-dorsal region, and across the lumbar and sacral regions. The tumor sections were stained in alum-carmine and in hematoxylin; the cord sections by Weigert's method.

Examination of the tumor sections shows the mass to be a spindle-celled sarcoma. The cells are arranged largely in rotating groups, and in several parts hyalin masses are seen similar in all respects to those found in psammomata. The tumor has almost no capsule and contains but very little delicate embryonic stroma. The blood-vessels, while not numerous, are fairly well developed, being more than simple embryonic vessels.

The microscopic examination of the first cervical segment shows the right half to be preserved, with the exception of some disintegration posterior to the gray commissure, while the left half is so softened and disintegrated that sections cannot be made, except through the left posterior and left anterior columns. The left posterior gray cornu is seen passing through the disintegrated area. The brunt of the inflammatory process seems to have been posteriorly and to the left. All of the tissues remaining here present evidences of inflammation with degeneration, increased interstitial tissue, destroyed nerve-fibers, thickened blood-vessel walls, and granular débris. The right half of this segment also presents evidences of inflammation, but to a less degree than the left side.

The entire left side of the second cervical segment is disintegrated except the left anterior column and a thin border along the posterior median fissure, a thread of white matter occupying the place of the lateral columns. All of these portions present the signs of inflammation as detailed above. The right side of this section is preserved, with the exception of the lateral columns and the sensory tract of Gowers, all of which are, however, infiltrated with blood elements.

The right side of the third cervical segment can be sectioned if thick sections are made. Under the microscope is seen a mass of nerve filaments and inflammatory edematous tissue in which no distinction can be made between the gray and white matter. The margin of this right half is very soft and quickly becomes detached from the rest of the section. Under the microscope it is seen to be badly degenerated. The left half of this portion of the cord could not be sectioned by any manipulation, being absolutely and completely disintegrated. Some of the softened material was teased, and under the microscope abundant masses of granule corpuscle, débris, myelin masses and many corpora amylacea were found. In the tissues of this section that did remain, there is evidence of an increase in the interstitial tissue with an increase in the thickness of the blood-vessel walls.

In the fourth cervical segment, there is no absolute disintegration, but the inflammatory process of the third segment extends to this segment, and especially affects the posterior medium and external columns and to a slighter degree the posterior lateral columns.

The mid-dorsal segment shows a normal cord with the exception of degeneration of some fibers in the anterior and lateral columns.

The lumbar segment shows a normal cord, with the exception of slight sclerosis in the left lateral column.

The sacral segment is normal or nearly so.

There are several points of interest connected with the clinical history and pathologic findings in the case reported in this paper. I shall only briefly refer to a few of them at this time. The macroscopic and microscopic appearance of the upper portion of the cord showed that greater damage had been done to that side of the cord opposite to the seat of the growth. Dr. F. W. Langdon of Cincinnati in *Brain*, 1895, vol. XV., p. 551 reported a case of "Multiple Tumors of the Brain; Fibrocystoma of the Pons and Cerebellum, and Multiple Fibropsammomata of the Dura, Pia, Arachnoid and Cortex Cerebri," in which the symptoms indicated that the lesion of the pons was on the side opposite to that of the tumor. It appears, then, that tumors in the neighborhood of the foramen magnum, so situated as to cause displacement of the parts against the bone, may give rise to a greater lesion by indirect than by direct pressure. This is important to bear in mind in tumors above the foramen magnum, but is of less value in growths below the foramen magnum, even should an operation for the removal of the tumor be undertaken.

The position of the tumor and its slender attachment to the inner surface of the dura would have made it a comparatively easy matter to remove the growth in the case of my patient had he been seen early, or before he became so extremely weak.

The microscopic examination shows that the third cervical segment was almost completely destroyed, but that the first and second cervical segments were greatly damaged, especially on the left side. It is probable that considerable destruction of the cervical cord took place after I made a careful examination of the patient's condition, some weeks prior to his death.

From the macroscopic appearances of the cord, it seems evident that the third cervical segment must have been destroyed by compression and by subsequent inflammation. It appears, then, that the first and second cervical segments supply with tactile sense the posterior portion of the scalp, a narrow strip on the posterior portion of the neck as low down as the fourth spinal process, and the face in front of and below each ear.

Dr. M. Allen Starr[1] gives the second and third cervical

[1] "Familiar Forms of Nervous Diseases," p. 128.

segments as supplying sensation to the posterior portion of the scalp and the neck. It is probable that the third cervical segment has nothing to do with supplying sensation to the scalp and posterior portion of the neck, but that it mainly affords sensation to the lateral and anterior surfaces of the neck.

NEW INSTRUMENT.

IMPROVED HYPODERMIC SYRINGE.

BY A. C. BARNES, M.D.,
OF PHILADELPHIA.

EVERY physician who has experienced the bother attendant upon the use of the ordinary hypodermic syringe will appreciate the points of excellence possessed by the syringe illustrated in the accompanying cut. The syringe

Mulford's Improved Hypodermic Syringe.

itself, by means of the improved piston and vulcanized rubber packing, permits of instantaneous adjustment so that by a few turns of the end of the piston the packing is brought in immediate contact with the barrel proper of the syringe, and is thereby always ready for immediate use. The syringe needle-holder and the eight vials for tablets fit by means of metal catches upon two aluminum trays which may be removed from the case and sterilized. The case is curved so as to conform to the shape of the body when carried in the vest pocket. The syringe and case is made by the H. K. Mulford Co., Philadelphia.

MEDICAL PROGRESS.

The Disinfection of Large Rooms with Formalin.—ARONSON (*Zeitschr. f. Hygiene und Infectionskrank*, June, 1897) describes the different attempts which have been made to utilize formaldehyde gas in the disinfection of rooms. Owing to its powerful germicidal action and to the fact that it injures neither metals nor fabrics, it seemed to be the ideal disinfectant. Attempts were first made to diffuse it by heating commercial solutions of formalin. This method proved to be an impossible one, because as soon as the concentration of the solution exceeds forty per cent. a polymerization of the formalin occurs, with a precipitation of paraformaldehyde, and if the heating is continued this finally begins to burn. It was next attempted to obtain the gas from a solution of formalin in methyl spirit called holzin. This solution spatters badly, and not only is much costly alcohol wasted, but it is not possible to develop large quantities of formaldehyde vapor in a short space of time—a factor which is absolutely necessary for efficient disinfection. Attempts have also been made to develop the vapor by the oxidation of methyl alcohol in lamps, but as aldehyde forms only a small percentage of methyl alcohol, this method is both costly and wasteful, and a large number of lamps are required to disinfect even a small room. Good results in disinfection were first obtained by means of an apparatus in which formaldehyde solutions were superheated under a pressure of three atmospheres. This is necessarily expensive, and its use is attended with a certain amount of risk. Recently Schering has constructed an apparatus in which the solid polymerized formalin or paraform, called also tryoxymethylin, is used for the development of the formalin vapor. It consists of a cylindrical mantel, beneath which is a spirit-lamp with a suitable wick. In the upper part of the mantel hangs a vessel, into which the formalin pastiles are placed. The upper end of the vessel is provided with a number of slits, through which the gases formed by the combustion of the alcohol—carbonic acid and watery vapor—must escape. In their passage through the vessel there is a mixture of these vapors of combustion with the formalin vapors generated by the heating of the formalin pastiles. In such an apparatus from 100 to 150 pastiles, each weighing 15 grains, may be vaporized at once. This is sufficient, as careful experiments have shown that a room containing 3500 cubic feet of air space may be absolutely sterilized.

Suppurative Typhlitis and a Normal Appendix.—In the *Revue de Medecin*, August, 1897, LOP gives the details of a case of suppurative inflammation of the cecum with perforation at its external border, although the appendix was perfectly normal. An artificial anus was established, and after a convalescence, prolonged by hemorrhages from the wound and by pneumonia of the left lung, the patient's condition was greatly improved. Six weeks later the patient died from the effects of an operation which became necessary to relieve a stricture of the intestine near the site of the old wound.

Substitutes for Phenacetin and Antifebrin.—VAMOSSY and FENYVESSY (*Therapeut. Monats.*, August, 1897), who have experimented with two new drugs, called phesin and cosaprin, draw the following conclusions: Both possess certain advantages over phenacetin and antifebrin, from which they are derived. They are easily soluble in water, and may therefore be given subcutaneously; they act quickly; they are less dangerous than the preparations from which they are derived; their action continues only a short time, but this may be overcome by the repeated administration of small doses.

The Best Liquid for Use as an Injection in Young Infants.—MERCIER (*Medical Week*, August 20, 1897) recommends for use as an injection in young infants, in place of the boric-acid solution, plain water, or normal salt solution commonly employed for this purpose, a saturated solution of naphthol. This substance is sparingly soluble in water, about 3 grains to the quart. The addition of borax increases its solubility, so that 15 grains may be dissolved in a quart of water.

To Detect Minute Quantities of Liquid in the Knee-joint.—An English army surgeon, DUER, recommends (*Med. Week*, August 20, 1897) the following method of exploration, which he has always found successful: The knee is slightly flexed and laid on its outer side so that the inner side is well in view; the operator then applies firm pressure with his hand directly over the patella. Should the joint contain any liquid, the skin on the inner border of the patella will undergo a manifest degree of expansion. In this way it is possible to ascertain the existence of an articular effusion when fluctuation is not apparent.

Exophthalmic Goiter Treated by Resection of the Two Cervical Sympathetics.—GERARD-MARCHANT (*La Presse Médicale*, July 3, 1897) treated a patient with exophthalmic goiter by resection of the inferior portion of the right and left superior cervical ganglia with about two inches of the nerves, an improvement in the eye condition was noticeable almost immediately, and this increased until the exophthalmos was very slight indeed. The pulse decreased from 80 to 100 to a constant rate of 80.

In the same number of this Journal, CHAUFFARD mentions a similar case occurring in a man. Quenu performed a bilateral operation as above described. The immediate results were scarcely noticeable. Two and a half months later an attack of tachycardia came on, and the patient was given a bottle of digitalis with instructions regarding its use. He took nearly the whole contents of the bottle, and died some hours later of acute digitalism. However, he lived long enough to demonstrate the failure of the operation.

A Genital Symptom of Renal Calculus.—ABRAHAMS (*New York Med. Jour.*, Sept. 11, 1897) calls attention to a premonitory symptom of renal calculus which he has observed in four adults, two men and two women The men consulted him for tenderness, pain and swelling of one testicle. In the women one ovary was similarly affected. At the end of from four to fourteen days after the beginning of the attack these individuals all suffered from renal colic on the affected side, passed a calculus and recovered. The tenderness and swelling of the affected ovary or testicle quickly disappeared.

Round Shoulders.—In the *Boston Medical and Surgical Journal* for September 9, 1897, BRADFORD published an illustrated article upon the round shoulders frequently observed in growing boys and girls, and occasionally in weak adults. The scapulæ drop forward, the posterior edges projecting behind. The neck is thrown forward, and there is an unusual hollow in the small of the back. This is notably increased if the patient while standing erect is directed to extend both arms in a vertical direction. Bradford considers that the cause of this condition is a faulty arrangement of the clothing. For the sake of convenience, and owing to an exaggerated fear of injury to the pelvis, the skirts and often the stockings of children are fastened to a dress waist. These waists usually have a narrow shoulder strap, which presses upon the trapezius muscle. To avoid this pressure the head and shoulders of a child are dropped forward.

The treatment of this condition is long and somewhat tedious. Its prevention is more important than its cure. As far as possible, the weight of the underwear should be borne by the hips, while the waist should be so constructed as to make no pressure upon the sternum, and where any weight is thrown upon the shoulders, it should be a force which pulls them backward and not forward.

Cysts of the Vermiform Appendix.—MONTGOMERY (*Jour. Amer. Med. Assn.*, July 24, 1897) reports a cyst of the vermiform appendix which was 5½ inches long and about four inches in circumference, and contained a watery fluid. The patient was a woman, aged fifty-two years, upon whom panhysterectomy was performed for multiple uterine growths. The cyst of the appendix was accidentally discovered and was removed. The patient recovered. A number of cases of cysts of the appendix have been placed on record, but most of them have been of small size.

THERAPEUTIC NOTES.

The Medical Treatment of Toothache.—COLEY gives in September number of the *Practitioner* some prescriptions for the treatment of toothache which he has found reliable. He rejects the use of narcotics as not being directly applicable to the seat of pain. More efficacious is the insertion into the cavity of the tooth of a bit of absorbent cotton soaked in a mixture consisting of equal parts of pure carbolic acid and water. A bit of dry cotton should be placed over the moist. The pain ceases usually in a few minutes; if it recurs a few hours later, the treatment should be repeated. Attention is apt to be called to the existence of any decayed teeth by an attack of dental neuralgia. The following prescription may be given with benefit:

℞	Quin. sulph.	gr. ii
	Acid hydrobrom.	*m* xv
	Tr. gelsem.	*m* xv
	Syrup	3 iss
	Aquæ, ...	3 j.

M. Sig. Twice daily.

A toothache which comes on after eating, and due to excess of acidity, may be relieved with astonishing rapidity by the administration of an alkali. A Seidlitz powder minus one-quarter of the acid fulfils the requirements. Salicylate of soda is at times a most valuable internal remedy for this distressing malady. Fifteen grains repeated, if necessary, every four hours will relieve the pain caused by the inflammatory products surrounding a tooth.

THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

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Address the Editor: J. RIDDLE GOFFE, M.D.,
No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK.

Subscription Price, including postage in U. S. and Canada.

PER ANNUM IN ADVANCE	$4.00
SINGLE COPIES	.10
WITH THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, PER ANNUM	7.50

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in *registered* letters.

LEA BROTHERS & CO.,
No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK,
AND NOS. 706, 708 & 710 SANSOM ST., PHILADELPHIA.

SATURDAY, SEPTEMBER 25, 1897.

OUR COUSINS IN SESSION.

WE have recently had presented the unique spectacle of a meeting of the great national association of our brethren of the Mother Country upon this continent and within a few score miles of our own border; and a brief and informal comparison between it and one of our own gatherings is not without interest.

The first and most permanent impression made upon the observer was the striking similarity between the two, for there was absolutely nothing in the character or appearance of the members of the British Association, the conduct of or attendance at the meetings, the value of the papers read, or the tone of the discussions to make one realize that one was not attending a session of our own Congress of Physicians and Surgeons, for instance, except, of course, the thumb-prints of the British tailor and the broad and beautiful British accent, which were always in evidence. And yet neither association is modeled upon the form of the other; it is simply the common blood and requirements causing the development of practically identical institutions.

There were, however, a few differences in details, and one apparently in mental attitude which are worth noting. In the first place, there was a refreshing absence from the program of such papers as "The Tomato-Heart," "Results with Ergot in Two Thousand Successive Cases of Labor," "My Last Hundred Ovariotomies," etc., etc., and likewise an absence from the meetings of individuals who looked capable of writing them. This may have been due in some measure to the greater scarcity of the breed, but chiefly, we think, to the fact that the officers of each section formed an actual, instead of merely nominal, board of censors, and exercised their power in the judging of papers submitted without fear or favor. It would be greatly to the benefit in every way of our own long-suffering Sections, with their overcrowded and ofttimes disfigured programs, if the identical executive mechanism could be galvanized into vigorous action.

Another commendable feature, which was of great convenience to those desirous of listening to the reading of the papers in which they were especially interested in the several Sections was the hanging outside the door of each room of a tablet, upon which was written by the doorkeeper the title of the paper under discussion and the name of the member discussing it. The title of each paper and names of speakers, as each rose, were also written upon a blackboard in each Section-room itself, so that one had not to depend upon the chairman's muttered recognition of "Dr. So-and-So," or the latter's more diffident self-introduction, in order to determine his identity. Both of these practices are in use in a few of the Sections of our own medical bodies, but they add so greatly to the convenience and enjoyment of a discussion that they deserve a much wider vogue.

The most decided difference between the sister organizations, however, was not one of form, but of spirit, subtle but distinct, and perhaps may best be described as that of mental attitude toward the powers that be. The member of the British Medical Association as an individual, as well as the Association as a whole, is, first of all, British, and, secondly, medical, which, in spite of all that has been said, and with some truth, about the patriotism and pride in existing institutions, is not true *mutatis mutandis* of his American brother or his professional organizations. The whole atmosphere of the meetings, outside of the Sections, was fairly surcharged with pa-

triotism, and the allusions which evoked the surest and most frequent applause were those referring to the Queen and her Jubilee, the Mother Country, and the future glories of Canada. There was nothing forced or perfunctory about it; the feeling was simply there and was irrepressible, and so spontaneous was it that it became infectious, and the guests from the United States found themselves joining in its manifestations with a heartiness which surprised them, partly, no doubt, out of courtesy and cordial sympathy with the success of their kinsfolk, but more deeply and strongly from a feeling, which rose unbidden and often unexpectedly, that they had the blood-right to glory in the large share of this which represented the achievements of a common ancestry; and this feeling was cordially reciprocated by our British and Canadian brethren. These demonstrations of patriotism were not simply to impress us with their loyalty—least of all to make us feel that this was the meeting of a British organization and we aliens, for there was the ever-present feeling that "we be of one blood, you and I," and that we should unite in being proud of the glories of our common family.

One matter of significant interest, as demonstrating the permanent existing basis of this patriotic enthusiasm and the practical evidence of its application, is the fact that at least six or seven of the twelve hundred or so medical men present are members of one of the Houses of Parliament, either British or Canadian. Our cousins across the water and on the other side of the boundary line are alive to the value of such representation, and show it. Roll all of our medical associations and congresses together and not one member of either national House can be pointed out, to our shame be it spoken. Such a condition of affairs is a discredit to the public spirit of our profession and a very serious disadvantage to the community. The sole honor of representing in Congress the many who practice medicine, with perhaps one partial exception, belongs to a homeopathic physician from New Hampshire, of whose competence and intelligence an idea may be gained when it is remembered that he is the official father of the fanatical and ignorant bill against vivisection which was introduced during the last session. More patriotism of the British sort would redound to our advantage and credit.

The sixty-fifth annual meeting of the British Medical Association is a thing of the past, and will long be remembered. The next time it comes to these shores the American brotherhood will again join its Canadian neighbors in extending the same hearty welcome. *Vale!*

ECHOES AND NEWS.

British Medical Association.—The next annual meeting of this Association will be held in Edinburgh, July 26, 27, 28, and 29, 1898, Sir Thomas Grainger Stewart presiding.

New York State Association of Railway Surgeons.—The seventh annual meeting of this association will be held at the Academy of Medicine, New York city, on Tuesday, November 16, 1897. C. B. Herrick, M.D., Troy, N. Y., secretary.

Dr. Stephen Smith Appointed Commissioner of Charities.—Dr. Stephen Smith of New York has been appointed Commissioner of Charities by Mayor Strong to fill the vacancy occasioned by the resignation of Silas C. Croft, who has been appointed Surveyor of the Port by President McKinley.

American Academy of Railway Surgeons.—The fourth annual meeting of this Association will be held in the Auditorium Hotel, Chicago, October 6, 7, and 8, 1897. The preliminary program promises a most instructive and entertaining meeting. D. C. Bryant, M.D., Omaha, Neb., secretary.

American Public Health Association.—The coming meeting of this Association in Philadelphia on October 26 to 29, 1897, will be the silver anniversary of this Society. An interesting feature of the meeting will be an exhibit of hygienic and sanitary appliances, preparations, etc., including all articles capable of furthering or preserving public or personal health. Dr. Irving A. Watson, Concord, N. H., secretary.

Cancer in the Imperial Family of Germany.—The sad case of the late Emperor Frederick, whose patient endurance of a laryngeal carcinoma gained for him the distinguishing title of "The Noble," is fresh in the minds of all. It now appears that his brother-in-law, the Grand Duke of Baden, is suffering from a similar malignant disease. His condition is so critical that he is at present confined to his home in the Black Forest.

Antisepsis of the Barber-shop.—Paris barbers and hairdressers are now obliged in accordance with police regulations to employ sanitary measures in carrying on their business. They are required to use only nickel-plated combs, to substitute pulverizers for powder-puffs, to cover the hair cut off with sawdust, and have it promptly removed, and to place all metal instruments. razors, shears, combs, clippers, etc., in a sterilizer for ten minutes before they are used.

Ether as an Intoxicant.—The habit of drinking ether for its exhilarating and intoxicating effects is said to be very prevalent in London and among the peasants of Ireland. That it is cheaper than alcohol, more rapid in its effect, and more delightfully exciting before the stage of unconsciousness is reached recommends it to these degraded devotees. The dangers of its use are very great, and with a fuller knowledge of this growing evil, many deaths from obscure causes may in future be correctly assigned to ether as a beverage.

The Effect of Counter-Irritation of the Skin.—Kronecker and Marti, writing in the *Atti dei Lincei*, give the result of a series of investigations on the effect of cutaneous excitation on the formation of red blood-corpuscles. They conclude: (1) Slight irritations of the skin promote the formation of red blood-corpuscles but modify the formation of hemoglobin in different ways. (2) Strong irritations of the skin determine a diminution of the number of red corpuscles and also of the hemoglobin contained in the blood. (3) Darkness diminishes the number of blood-cells for about two weeks, after which a slight increase is noticed. (4) Continued exposure to intense light—even at night to electric light—induces the formation of red blood-corpuscles and also of hemoglobin.

American Medical Students in France.—It is announced that hereafter the medical schools of France will be open to foreign students, as are those of Germany. On July 9th the *Conseil Superieur de l'Instruction Publique*, at a meeting held in Paris, decided upon this reform, and determined upon the character of the degree which shall be issued to this class of students. The new degree will be called the Doctorate-Universitaire, and will be issued by the universities directly, instead of by the State, as are the regular degrees of the French schools. The announcement does not declare positively whether this entitles the recipient to practise in France or not. M. Henri Breal, 70 Rue d'Arras, Paris, can furnish to students specific information regarding the requirements and the degree.

To Keep the Feet Warm.—Cork soles have long been employed to keep the feet dry, and more recently an American invention has been adjusted to the sole of shoes to maintain proper ventilation and keep the feet cool. Now a German near Dresden has devised a kind of heatable shoe to keep the feet warm. Within the heel of the shoe, which is adequately hollowed out for the purpose, is a receptacle for a glowing substance similar to that which is used in the well-known Japanese hand-warmers. Between the soles of the shoe, embedded in asbestos, is placed a rubber bag which is filled with water. A system of circulation of the water around the glowing substance in the heel is provided for by which the water is maintained at a proper temperature, the current being produced by the varying positions and pressure of the foot while walking. The warmth given by this arrangement is said to never rise above 70° F. and will last about eight hours. The soles are slightly heavier than the common sort but not much thicker than that of the ordinary wet-weather shoe.

Smokeless Powder and Expanding Bullets.—The deadly effect of firearms is being steadily increased by the constant improvements which are being made. The *Scientific American* says that the deadly effect upon game of small, metal-covered, expanding bullets with high velocity smokeless powder, has been recently satisfactorily demonstrated. Modern weapons possess several advantages over the old large calibers in flatness of trajectory, absence of smoke, long range, increased penetration, high velocity, less recoil, and light-weight ammunition. The expanding bullet produces invariably an area of laceration greater than ever effected by any projectile before used. Without calculating the effect of the nervous shock, extensive splintering of bone and laceration of tissue are produced. The secret of the deadly effect of these small projectiles lies in their expanding qualities and extraordinarily high velocity resulting from the use of smokeless powder, which is only possible when confined by small calibers. These facts are of interest not only to the members of the profession who are notorious Nimrods, when in search of large game, but are of immense practical value to the army and navy surgeon.

The Officiousness of Ambulance-Surgeons.—Probably no subordinate official feels his importance more or asserts his authority as much as the average ambulance-surgeon. Accidents are, of course, every-day occurrences to him, and wounds and injuries are his delight. A New York physician narrates an amusing experience of his, as follows: Happening in a pharmacy, he discovered a man lying upon the floor, a crowd around him, and an ambulance surgeon bustling in and out. The man had sustained a double fracture below the knee. Upon inquiring of the bustling surgeon what the case was, that young man flippantly replied, "Oh, simple fracture of the 'fib' and 'tib.' Would you like the case?" The case of a somewhat glaring breach of etiquette and decency on the part of an ambulance-surgeon comes from a hospital in Williamsburg, L. I. Upon being called to a mechanic who had fallen from a lofty building, the ambulance-surgeon was requested not to molest the patient, as he was unconscious, until a priest who had been summoned could arrive. Whereupon the ambulance-surgeon is alleged to have said, "To h—— with the priest. Let me get to work on the man," and hustled him off to the hospital. The ambulance-surgeon has been suspended awaiting investigation by the president of the hospital.

Health Reports.—The following statistics concerning cholera, plague, smallpox, and yellow fever have been received in the office of the United States Marine Hospital Service during the week ended September 18, 1897:

CHOLERA.

		Cases.	Deaths.
Bombay, India	August 10 to 17	..	143
Calcutta, India	August 1 to 7	..	8
Osaka and Hiogo, Japan	July 31 to August 7	..	1

PLAGUE.

Bombay, India	August 10 to 17	..	21

SMALLPOX—UNITED STATES.

Birmingham, Ala	September 6 to 13	7	..

SMALLPOX—FOREIGN.

		Cases.	Deaths.
Bombay, India	August 3 to 10	..	1
Madras, India	July 31 to August 6	..	2
" "	August 7 to 13	..	9
Madrid, Spain	August 24 to 31	..	3
Para, Brazil	August 21 to 28	..	1
Pernambuco, Brazil	June 26 to July 3	..	1
" "	July 24 to 31	..	1
Sagua la Grande, Cuba	August 18 to September 4	..	1
St. Petersburg, Russia	August 21 to 28	..	7
Warsaw, Russia	August 15 to 21	..	8

YELLOW FEVER—UNITED STATES.

Mobile, Ala	September 13	1	..
" "	September 14	2	..
" "	September 17	2	2
New Orleans, La	September 8	1	1
" "	September 12	7	..
" "	September 13	3	..
" "	September 14	5	..
" "	September 15	2	..
" "	September 16	2	..
" "	September 17	9	1
Barklay,	Miss. September 13	8	4
"	" September 14	1	..
Biloxi,	" September 16	15	1
Edwards,	" September 15	12	1
Ocean Springs,	" September 6	4	2
"	" September 13	1	..
"	" September 17	3	..
Pascagoula,	" September 10	1	..
"	" September 14	1	..
Perkinston,	" September 10	1	..

YELLOW FEVER—FOREIGN.

Cienfuegos, Cuba	August 30 to September 5	..	6
Kingston, Jamaica	August 22 to 23	1	..

CORRESPONDENCE.

TWELFTH INTERNATIONAL MEDICAL CONGRESS.

[From our Special Correspondent.]

MOSCOW, August 25, 1897.

THE Congress is drawing to a close. The ball at the Nobles' club was delightful notwithstanding the crowd present. The Russians danced their national dances with a gusto which was remarkable, considering that most of them were at least middle-aged, and supposed to be staid physicians. To the Westerner who finds at home a succession of waltzes on the ball program with an occasional two-step, it was a relief to find there is a place where they dance something else. The reception by the ladies' committee this evening was another pleasant reunion which showed Russian hospitality at its best. Everyone votes the social side of the Congress a success.

As to the interesting features which were striking enough to keep a place in the memory, some were new, and some only put in a novel way. After all not every communication at an international congress of medicine represents a distinct advance along some line, and some of them are drearily familiar. The report on the surgery of the lungs and its discussion brought out very clearly the fact that the thoracic cavity is no longer a sealed chamber to the surgeon whose sacred precincts he dare not invade or only at the sacrifice of a human victim to the tutelary deity of surgery. The French surgeons have arranged an entirely new branch of surgery for the lungs, but while it sounds all very fine and some of it supported by reports of successful cases, it is apt to strike one, as yet, as too theoretically complete to be thoroughly practical. Professor MacEwen's simple report, in a few words which took scarcely ten minutes, of what he has done for tuberculous cavities and the results of surgical interference, was extremely encouraging in its assurance of absence of serious danger and results which justified the operative risks incurred. It was all so quietly done that few would imagine that it is MacEwen's work in this line which practically broke ground for others; but that in this, as in brain surgery, in which he was also a pioneer, nothing was formally given to the profession until methods and results were sufficiently perfected to at once place the subject in a clear light. During the discussion of appendicitis one could not help but feel that some American surgeons could have suggested valuable points to their European brethren. Gradually the world is coming around to the necessity for operation in a large proportion of what some are still pleased to call perityphlitic cases. Professor Sonenberg of Berlin, and Professor Roux of Lausanne, both represent very advanced ideas as to most of the pathologic processes of the right iliac fossa, being surgical in their leanings rather than medical, and the general trend of thought as it came out in the discussion of their papers, shows that gradually the opinions of American surgeons on the subject are being recognized as truly conservative, though for so long they were regarded as almost wildly fantastic.

Professor Czerny's paper on gastro-intestinal surgery for pyloric stricture was a masterly review of the subject, and was listened to with a great deal of attention. One of its most noteworthy points was the announcement that the author had abandoned his own invention, the Czerny-Lembert suture, and in fifty-six cases had used the Murphy-button. He gave as his reasons that it was just as safe and much easier, and that it required much less time, which in the debilitated patients usually presenting for the operation of gastro-intestinal anastomosis is an extremely important point. Finally, feeding may begin much sooner than when suture alone is used. In Czerny's opinion one of the greatest advantages of the Murphy-button is that after its use there is no tendency to cicatricial contraction of the intestinal opening.

A new intestinal coupler, also from Chicago, made very like the Murphy-button but of absorbable material—the invention of Dr. Frank, received considerable attention.

Two papers, one from Cairo, the other from Paris, seemed to show that the contra-indications for lithotrity are growing more and more limited. Professor Albarran representing the school of Guyon, and Doctor Rolfe, what may be called the Anglo-Indian school of surgeons, reported successful operations on very young children and for extremely large stones. The *débris* of calculi weighing from 200 to 450 grams were exhibited, which had been removed after crushing at a single sitting, and so a great advance in conservative surgery is to have even wider application in the future.

Professor Credé, whose demonstration that silver-wire sutures have an antiseptic action because the metal is acted upon by the tissues and forms in wounds compounds which are powerfully antiseptic, claims to have discovered even a wider application for silver. He uses certain of the more insoluble silver salts internally, and after absorption there is sufficient of the metal in the circulation to produce an antiseptic action. For abscesses and especially for erysipelas the results of this general antisepsis have been most favorable, and it is expected to be of the greatest service in septic wounds where the absorption of toxic agents is going on and pyemia is threatened.

In Pott's disease the discussion of the papers presented brought out very clearly the fact that most orthopedists, in recent cases at least, believe in forcible, immediate reduction, and then mechanical retention in the corrected position until healing occurs. Healing does not take longer than if the disease were allowed to run its course in a plaster jacket or with absolute immobilization in bed, and the resulting deformity is much lessened. These are not the opinions of a few men but of all the orthopedic surgeons present.

The discussion of the surgery of brain tumors must have been encouraging and consoling to those who have sometimes trephined and not found the expected tumor, and possibly found one that despite the absolutely limited localizing symptoms it gave was entirely inoperable. One set of statistics showed that about once in ten operations for brain tumor no tumor is found and once in six times the tumor is inoperable. The discussion made clear the fact that only the most absolutely classic localizing symptoms can be depended upon for a diagnosis of brain tumor and even these only in special regions. Certain nervous fibers are, by personal idiosyncrasy, so much more resistant than others that they communicate pressure to parts beyond them and do not suffer from it themselves, thus producing simulation of localizing symptoms at a distance from the lesion.

Another thing which this discussion brought out was that surgeons, owing to the more or less uncertainty of diagnosis in so many cases, are making larger openings in the skull. Doyen of Paris, for instance, believes in a temporary craniectomy in every case, and suggests that the operation carries with it, in these days of aseptic surgery, so little risk that in serious cases it may be done for diagnostic purposes, and that an exploratory craniectomy is as justifiable as an exploratory laparotomy.

Professor Kacher of Berne, after a series of operations for exophthalmic goiter, says that in its early stage it is properly a surgical disease, and may be relieved by surgical means. His theory is that the symptoms are due to oversecretion of the thyroid. To decrease this he removes one-half the gland and ties one of the main arteries —the inferior or superior on the remaining side. At an early stage of the disease the operation is not difficult, and he considers that the employment of useless medication for months and then transferring the case to the surgeon is unjustifiable as the disease is more properly a surgical one from the beginning.

The old principle that fractures must be immediately immobilized and then kept absolutely quiet until the healing process is completed received some serious blows. Dr. Lucas Championniere of Paris has been treating all fractures for years practically without apparatus and with immediate massage and passive movements. He has obtained particularly satisfactory results in fractures of the upper and lower end of the humerus, those around the elbow and in fractures of the clavicle—the fractures for which the most varied apparatus have been invented, the greatest care in absolute immobilization taken and in which notwithstanding it all the results have, as a rule, been anything but satisfactory. Dr. Championniere and his ideas were confirmed by others who use only the simplest forms of temporary bandage. By this treatment Dr. Championniere has obtained in the short period of three weeks solid union without noticeable deformity.

Some of the best Roentgen-ray pictures of the hand exhibited in the surgical section of the Congress were taken without the use of a Ruhmkorff coil. An ordinary two-plate Wimshurst static electric machine, with a Leyden jar in the circuit, had been used to produce the X-rays. The result was so good that some of the histologic details of the bones were clearly developed. With slight changes the same means may be used for a radioscopic work, and it would seem as though some simpler and less expensive, also less technical means of producing these now so much valued pictures may result from further experimentation.

TRANSACTIONS OF FOREIGN SOCIETIES.

The Seventh Congress of German Gynecologists was held at Leipsic June 9 to 11, 1897.

SCHULTZE gave as the *causes of retroversion and retroflexion of the uterus:*

1. The relaxation of the supporting apparatus of the uterus, principally the retractor uteri of Luschka, the muscles in front of the broad ligament, the round ligaments, and the fasciæ. This relaxation may be due to (*a*) pregnancy and the puerperal state; (*b*) posterior parametritis in the course of absorption; (*c*) habitual state of repletion of the rectum; (*d*) prolonged dorsal decubitus, and especially the action of the abdominal pressure in this position.

2. Fixation of the cervix in a more anterior position than normal: (*a*) by cicatricial bands resulting from anterior parametritis; (*b*) by bands arising from extensive lacerations of the neck of the uterus, or supervening after bilateral notching or other operations, performed on the uterus without necessary aseptic precautions; (*c*) by cicatricial bands due to loss of substance by gangrene in front of the cervix or to the existence of vesicovaginal or vesico-uterine fistulæ.

3. Abnormal shortness of the vagina, more especially its anterior wall: (*a*) as a result of arrest of development in childhood; (*b*) as a result of senile atrophy.

4. Habitual state of fulness or extreme distention of the bladder.

5. Distention of the vulva, and laceration of the perineum.

These five etiologic conditions are the most frequent. If several of them coexist, their action is naturally increased. Other less important causes are abnormal length of the cervix, the presence of a tumor of the uterus or of the cervix, abnormal situation of an ovary or a tumor of the same.

The following prophylactic measures are indicated: Excessive distention of the bladder should be avoided in children and young girls. To avoid parametritis, a light aseptic bandage should be worn during the menstrual period by those predisposed to uterine catarrh. Lacerations of the perineum, however small, should be repaired as soon after delivery as possible, in order to avoid distention of the anterior vaginal wall. Careful attention must be paid to regular evacuations of the bowels during the puerperal state and afterward. If subinvolution of the uterus progresses too slowly, ergot or ergotin should be administered.

The diagnosis of retroflection is in most cases easily made by manual palpation, but in order to recognize exactly all the complications and especially the obstacles to reduction, anesthesia is desirable.

The non-operative treatment of retroflexion consists in reduction of the displaced organs. If no adhesions are present nor any other complication, a pessary should be at once introduced. Celluloid pessaries are most to be recommended, and their shape ought to be adapted to each particular case. A pessary should never be introduced unless reduction is perfect, a rule which unfortunately is often broken. During the first days the pessary should be carefully watched and changed if it does not accomplish its object. To favor the action of the pessary, and to obtain if possible a permanent cure, cold enemata are to be taken daily after each movement of the bowels and ergot during the menstrual flow. In certain cases massage and electricity may be added to the treatment by the pessaries. Although the most favorable results are obtained in recent cases, those of long standing do equally well if the patient has borne a child or has had a miscarriage a short time before commencing treatment.

The most frequent complications are subinvolution of the uterus, metritis, endometritis, and oöphoritis. These complications, if they have not existed too long, often disappear rapidly after reduction of the displacement.

The obstacles to reduction must be carefully made out during narcosis by rectovaginal and abdominal palpation. The obstacles often depend upon a prolapsed ovary, adhesions of the posterior surface of the uterus to intestinal coils or to the rectum, or cicatricial bands occupying the parametrium, the peritoneum or both. If these obstructions cannot be overcome, during narcosis, the abdominal cavity should be opened and the adhesions divided.

OLSHAUSEN spoke of the symptomatology and operative treatment of retroflexion. Many cases give no symptoms for months, but usually there is pain in the lumbar region, headache, a feeling of weight in the stomach and pelvis, difficulty in walking, more or less marked melancholia, constipation and dysmenorrhea, although a marked degree of the last symptom indicates the presence of complications. In long-standing cases of retroflexion, hemorrhage appears in the form of too abundant or too frequent menstruation. Sterility may result from retroflexion, but is usually caused by the presence of lesions of the adnexa.

Retroflexion is a frequent cause of miscarriage in the second or third month of pregnancy. In most cases, however, pregnancy causes a gradual reduction and thus goes on without interruption to full term. In certain cases there is only a partial reduction of the uterus, and an unreduced diverticulum remains. In such a case miscarriage may be brought about in the sixth, seventh, or eighth month.

Surgical treatment of simple movable or fixed retroversion and retroflexion has of late years been resorted to too readily and injudiciously.

WINTER, from observation made at the Berlin Polyclinic, said that retroflexion exists in about twelve per cent. of all gynecologic cases. In eighty-four per cent. of these the retroflexion exists with complications. The most frequent cause of perimetritis he found to be gonorrhea.

In six years DUHRSSEN has performed 281 intraperitoneal vaginofixations, and has seen but six recurrences. Most of these patients had received previous treatment.

WERTHEIM has performed fourteen times for movable and nine times for adherent retroflexion, an operation devised by himself which consists in shortening the round ligaments through the vagina. In only one case was there a recurrence.

MARTIN never operates in cases of simple movable retroflexion. He attaches no importance to anything but complications. In all adherent retroflexions the patient is anesthetized, and the operation selected which best fits the case. Catgut alone is used for sutures.

HOFMEIER, after describing the *varieties of placenta previa*, and their supposed origin, went on to speak of the diagnosis of this condition. The persistence of hemorrhage after the rupture of the membranes raises a suspicion of premature separation, either of a placenta previa or of one which is situated very low in the uterus.

The first indication for treatment is to arrest hemorrhage. For this purpose if the cervix is still closed, the vagina should be thoroughly tamponed with sterile or iodoform gauze. If necessary this can be repeated or kept up for several days. As soon as labor has begun the membranes should be ruptured in order that the descending fetus may press upon the lower uterine segment and so compress the bleeding vessels. From this point many labors progress without further difficulty to a normal termination. In other cases the pains are insufficient and irregular and hemorrhage continues in spite of the escape of the waters. Consequently it is safer to follow the advice of Hicks and to perform internal version at once, and to bring down one foot. This procedure will usually suffice to stop the hemorrhage.

SCHATZ, while admitting that the rupture of the membrane facilitates the pressure of the placenta against the uterine wall, said that this procedure delays the labor

and thus may render dangerous, on account of its long duration, a comparatively small hemorrhage. It should, therefore, never be performed except when the head is ready to engage, or when the cervix is sufficiently dilated to permit of internal podalic version. In other cases a tampon is to be employed without rupture of the membranes.

SKJUTSCH mentioned the case of a young woman who had never borne children nor had a miscarriage. After severe pain and the loss of a small quantity of blood, she passed a membrane which was a perfect cast of the cavity of the uterus with a small opening corresponding to the internal os. The conclusion was drawn that the embryo had been passed unobserved in the blood-clots. However, two days later, pain recurred and the woman expelled a perfect embryo about four centimeters (1 3-5 inches) in length. The question arose whether the membrane first passed was a decidua vera or reflexa. The size of the opening in it absolutely precluded the idea that the fetus had been contained in its cavity. Bimanual palpation showed that the right tube was considerably increased in size. The uterus itself was neither bifid nor bicornate. The explanation seemed to be that this was a miscarriage following tubal pregnancy, the decidua vera being first expelled.

BODERLEIN spoke of the danger of intra-uterine injections, mentioning a case which occurred recently in which death followed forty-eight hours after the injection of two cubic centimeters (thirty minims) of a fifty-per-cent. solution of chlorid of zinc. At the autopsy the zinc was found in the peritoneal cavity, although there was no trace of cauterization of the tube. Boderlein experimented upon six uteri which were about to be removed by the vaginal route. Immediately before operation the cervical canal was dilated, and under circumstances which permitted the escape of the excess of the fluid through the vagina, a small syringeful of a solution of methyl violet was injected into the cavity of the uterus in four cases. In one case the fluid easily penetrated into the cul-de-sac of Douglas. In two cases the tubes were found to be obliterated. In the fourth case the tubes were open, but the fluid did not pass through them. In a fifth case, in which tincture of iodin was injected, the tubes were found to be closed. In the sixth case a fifty-per-cent. solution of chlorid of zinc was used. In this instance the peritoneal cavity was afterward found to contain three or four tablespoonfuls of a milky fluid containing coagulated fibrin, a liquid due, in the opinion of the speaker, to peritoneal exudation. The right tube was red and swollen, but did not present the appearances of true cauterization.

An Electuary for Habitual Constipation.—

℞	Washed sulphur } aa Cream of tartar }	. . .	4 parts
	Senna leaves	. . . .	2 parts
	Powdered cardamon	. . .	1 part.

Syrup of rhamnus, q. s. ad. to give the right consistence.

M. Sig. A teaspoonful to be taken morning and evening.—*Jour. de Méd. de Paris.*

SOCIETY PROCEEDINGS.

THE BRITISH MEDICAL ASSOCIATION.

Sixty-fifth Annual Meeting, Held at Montreal, August 31 to September 3, 1897.

[Special Report to THE MEDICAL NEWS.]

SECTION IN DERMATOLOGY.

FIRST DAY—SEPTEMBER 1ST.

MR. MALCOLM MORRIS of London, England, delivered the annual address, entitled

THE RISE AND PROGRESS OF DERMATOLOGY.

The speaker referred to the present being a time of jubilees and centenaries, and to the chastening effect of such retrospects—"showing that, if we have any reason to look upon ourselves as just in a scientific sense, it is largely the result not of our own merits, but of those of the men who prepared the way for us." He further pointed out that they have the great advantage of enabling us to see exactly what we have attained in our knowledge of dermatology, and in showing us what has been done and what remains to be done.

He stated that in the recountings of the triumphs of medicine during the glorious reign of Queen Victoria dermatology has had no part. Dermatology, although its victories have perhaps been less showy than those won in some other special departments, has not lagged behind in the onward march of medicine. He said that his object would be to supply the missing chord in the great *Jubilate*, the echoes of which are still ringing in our ears. He called attention to the fact that the centenary of the birth of scientific dermatology is not long past. In 1790 the Medical Society of London awarded the Fothergillian gold medal to Robert Willan, who had some time before submitted his plan for the arrangement and description of cutaneous diseases. Willan may justly be called the creator of dermatology. Our terminology bears witness that Willan was not the first who wrote on skin disease. The Greeks gave a good deal of attention to the subject, and roughly classified cutaneous disorders, though they confounded much they observed with leprosy, and at a later period syphilis overshadowed everything.

After speaking of various medieval writers and writings upon the subject in hand, he turned to the English school, headed by Willan, before mentioned, and his pupil, Bateman, who completed Willan's unfinished work on skin diseases. A landmark in the history of English dermatology is the work "Diseases of the Skin," by Erasmus Wilson, which appeared in 1851. The characteristics of the British school of dermatology are those of the British intellect in whatever sphere it is set to work, above everything else practical, and a capacity for seeing things as they really are. The living leader of the British school, Mr. Jonathan Hutchinson, was spoken of in terms as laudatory, under the circumstances, as it would be permissible to use. Of him it was said that he brought to the study of the pathology of the skin a knowledge of disease in general such as probably no other dermatologist ever possessed. The facts gathered by the members of the English school have endured while theories and systems have followed

each other into nothingness. Dermatology as it exists to-day is largely the work of their hands.

In France a school of dermatology arose independently during the early years of the century. Skin diseases were regarded, for the most part, as the expressions of some constitutional dyscrasia, which at best was an unnecessary hypothesis, and was sometimes, as in the case of the so-called "dartrous," "psoric," and "herpetic" diatheses, a myth. Indeed, it may be said that early French dermatology was the "last ditch" in which these medieval notions still fought for life. In recent years the labors of Hardy, Vidal, Besnier, and Brocq have placed the French school in the forefront of scientific dermatology—a position which, with such men as Derier, Thibierge, and Wickham to take the place of their seniors, it is in no danger of losing.

In 1844 the first appearance of Ferdinand Hebra before the scientific world marked an era in German dermatology. Hebra applied to the investigation of skin diseases the pathologic teaching of Rokitansky. He classified them according to the nature of the pathologic processes of which they were examples. He used the experimental method, and produced various lesions on healthy skin by artificial means, observing the changes which they underwent when allowed to run their course, and when modified by treatment of various kinds. Hebra rationalized dermatology, and his classification, though it has necessarily been modified with the growth of knowledge, will never be superseded till an arrangement based upon etiology becomes possible.

In regard to American dermatology, the speaker quoted from its history as written by Professor J. C. White of Harvard and by Professor L. A. Duhring of Philadelphia. During the first thirty years of the century little or no interest was taken in cutaneous affections in America. In fact, as Duhring tells us, a disposition existed to consign the whole of this branch of medicine to those outside the professional pale. Signs of a growing interest in the subject soon became manifest. In 1836 an Infirmary for Diseases of the Skin was opened in New York, being the first institution of the kind in the United States, and lectures on skin diseases were delivered there, and afterward in some of the medical schools of New York between the years 1837 and 1854, by Dr. H. D. Bulkley, father of Dr. L. D. Bulkley, whose name is well known to all dermatologists. The establishment of the American Dermatological Association in 1877 gave a powerful impulse to dermatology in this country, yet in 1871 Professor J. C. White complained that as yet America had contributed little to dermatology. Now this reproach has been wiped away, and American dermatology, represented by Duhring, White, Bulkley, and others, is recognized as being in the van of progress.

By the translation of the representative works of each of the three great schools into the language of the others, dermatology has become truly international, the different schools which were formerly separate being fused into one.

The most striking mark of the progress of this specialty as compared with its status in the beginning of the century, is the knowledge of the nature and causes of skin diseases which has been gained. Classification has been simplified, until dermatology is no longer a terror to students and practitioners. Further simplification has resulted from learning to distinguish between primary and secondary lesions. Pathologic research has accomplished much in the elucidation of the nature of growth, benign and malignant, of the skin. Real progress, however, has been measured by the increase of our knowledge of the causes of disease. In this respect the speaker thought as much had been done in dermatology as in any other branch of medicine, and stated that the etiology of a considerable proportion of skin diseases is now accurately known. The differentiation of the skin affections due to syphilis and tuberculosis has greatly reduced the region of the unknown in the map of dermatology. The progress of dermatologic etiology has been materially augmented by an increased knowledge of the parasitic skin diseases, particularly by the discovery of the vegetable fungi which cause ring-worm, favus, tinea versicolor, and erythrasma. The speaker also treated briefly the advance in pathology due to the bacteriologic researches of Pasteur, Koch, and their disciples. Many skin affections have already been proved to be of microbic origin. It is practically certain that syphilis has a like cause. Eczema and psoriasis are considered by Unna, who has done much for recent advance in dermatology, to be of microbic causation. The same is said to be true in regard to alopecia areata, acne, and certain forms of erythema. Quite recently Sabouraud has produced evidence which he thinks sufficient to prove that seborrhea and common baldness belong in the same category. Though these views have not all been accepted, there can be little doubt that, as methods of research are perfected, the "sphere of influence" of bacteriology in relation to skin diseases will be greatly enlarged.

The speaker also referred to disorders of the nervous system and to auto-intoxication as causative factors in the production of cutaneous affections, a field as yet but little explored. In reference to therapeutics, he said that now internal medication is used only in response to definite indications.

He spoke of hypodermic injection as one of the most promising improvements in constitutional therapeusis. The serum treatment, though not yet definitely established, has given good results in a few cases of syphilis, lupus, leprosy, etc. Koch's first tuberculin was mentioned as having a distinct use as a preliminary to the surgical treatment of lupus. The newer tuberculin gives promise of much greater usefulness.

The speaker's experience, and that of several other dermatologists, does not lead him to attach much importance to the use of thyroid extract in dermatologic practice. In regard to the improvements in means of local treatment, he spoke in terms of praise, mentioning particularly the long and constantly increasing list of parasiticides, the more cleanly and effective modes of preparation and application, the pastes, plasters, varnishes, soaps, sticks, and other devices which have revolutionized the local treatment of skin diseases.

In conclusion, he spoke of the future of dermatology.

He thought that the newer medication with serums and organic extracts will be the direction most likely to lead to the best results.

At the conclusion of this address, DR. GEORGE THOMAS JACKSON of New York read a paper, entitled

A CASE OF MULTIPLE IDIOPATHIC ANGIOSARCOMA LASTING TWENTY-ONE YEARS.

The patient was a man, a native of Nova Scotia, aged forty-seven, and the lesions were widely distributed. Involution had taken place under the administration of arsenic. The pathologic report, by Dr. G. P. Elliott of New York, showed that the lesions were of the type of pigmented spindle-celled angiosarcoma.

DR. NEVINS HYDE of Chicago said that a like improvement under arsenic had taken place in a similar case under his treatment. The clinical characters remove these cases from the category of sarcoma.

DR. JAMES GALLOWAY referred to a case under the care of Dr. Stephen Mackenzie which he had observed during nine or ten years. Histologically, the cells were degenerate in character and resembled those produced by chronic irritation of connective tissue. He agreed that the cases belonged to a category distinct from sarcoma.

A paper on

THE NON-SURGICAL TREATMENT OF BOILS, CARBUNCLES, AND FELONS

was read by DR. L. DUNCAN BULKLEY of New York. He treats all the minor forms of these lesions by internal medication, consisting mainly of sulphate of magnesia and iron, with large doses of freshly prepared sulphid of calcium. Externally he applies carbolic acid and ergot in the form of an ointment. The PRESIDENT expressed the opinion that Dr. Bulkley's views were retrograde in tendency. He was convinced that he would be supported in the view that the best treatment in such cases is to remove the suppurating and necrosed tissue and to use antiseptic methods. An animated discussion took place on this subject.

DR. W. T. CORLETT of Cleveland, Ohio, read a paper on

THE GENERAL MANAGEMENT OF SKIN DISEASES,

in which he urged the importance of general treatment, dietetic and hygienic. The PRESIDENT entered a protest against indiscriminate medication and exaggerated precautions in diet. Dr. G. H. Fox of New York expressed similar opinions, and said that in many cases the advice and care given by trainers to those preparing for athletic exercises is of more real value than the prescriptions of the physician. Dr. Nevins Hyde also protested against over-medication, but desired to defend American dermatologists from any imputation of the kind.

SECTION IN PHARMACOLOGY AND THERAPEUTICS.

FIRST DAY—SEPTEMBER 1ST.

DR. D. J. LEECH, President of the Section, delivered an address upon the subject of

PAST AND PRESENT VIEWS AS TO THE ACTIONS OF MEDICINES.

He said in part: "The Section in Pharmacology and Therapeutics, over which I have the honor to preside, is one of those which is not always constituted at the Annual Meetings of the British Medical Association. The fact that one side of its work—the therapeutic—can be dealt with in other sections is doubtless the chief cause of this; a second may be a certain lack of interest in Pharmacology. Comparatively little attention has been given in England in recent years to the cultivation of knowledge concerning the method in which remedial agents act. In most countries, however, a constantly increasing interest is being shown in determining, not only the action of remedies, but the mode of their action. The establishment on this side of the Atlantic of that admirable periodical, *The Journal of Experimental Medicine*, in which Pharmacology takes its place with Physiology, Pathology, and Medicine, is a valuable sign of this interest, and my great pleasure at being honored with the office of President of this Section is heightened by the feeling that by its constitution on this occasion evidence is given of the appreciation of the scientific as well as the practical side of therapeutics in this country.

"The discoveries made concerning the curative influence of certain animal substances, such as thyroid gland, and concerning toxins and antitoxins, mark a new departure in therapeutics. Dr. Saundby considers that though the recent discoveries with regard to pathogenic organisms and their products open up to us an altogether new prospect in therapeutics, the system of pharmacology is about to pass into the limbo of the forgotten, and Professor Behring of Marburg thinks that in the light of serum treatment all our older views must vanish. Cellular pathology, he says, has become unfruitful for therapeutics; it is vain to treat the organs which are affected. Serum treatment, if we may judge from the *résumé* of his paper, which was read at the recent *Congress für inuere Medicin* at Berlin, is alone efficient. If Behring's view as to its nature is correct, its study is almost outside the boundaries of pharmacology, for he holds that antitoxin is not a definite chemical compound, but a *quality*, inherent in certain albuminous substances as magnetism is in the magnetic oxid of iron. If antitoxins are powers, not substances, we are almost carried into a new world in which pharmacology, as at present understood, has no place. There seems little probability that the view of the enthusiastic supporter of serum treatment has any real foundation, and as I do not know the reasoning which has led to its adoption I shall not attempt to controvert it. The general bearing, however, of treatment by animal substances on our ideas as to the methods in which medicines act is worthy of consideration. My contention is that the new discoveries, while extending the domain of pharmacology, are in no way opposed to its long-established teachings; that the various animal substances act on the same lines as the older remedies, though they possess certain properties which are wanting, or less apparent, in the older drugs, and that even if the most sanguine expectations of their powers are fully borne out, the utility of the pharmacologic knowledge already acquired will not be lessened.

"Concerning the action of thyroid and allied substances I need say but little. Physiologic and pathologic

investigations indicate that the ductless glands, and even those which furnish excretions, supply some material which passes into the blood; and it is just possible that other tissues do the same. These internal secretions are probably necessary for the chemic transformation of other substances in various parts of the system, and if the supply be defective certain ailments result. By giving thyroid gland we can certainly remove the effects due to an insufficient supply of its secretions, and reason has been given for believing that several other animal substances and their extracts yield, when given internally, material wanting in the blood, and thus prove of advantage in some diseases. But we have here no new pharmacologic principle. The administration of a remedy for the purpose of adding something to the blood, which is not present in sufficient quantity, is not a departure from ordinary pharmacologic ideas.

"The effect of toxins and antitoxins requires to be more fully dealt with, but before comparing their action with that of other medicinal substances, let me point out opinions formed during late years with regard to the action of the latter. In the first place, it has become clear that for the changes in functions or tissues we must chiefly look to the effects produced by drugs on the ultimate tissue elements, or cell protoplasms, and Schmiedeberg long ago pointed out that this influence is probably to some extent molecular. The presence of molecules of elements or chemic compounds seems to produce some effect on those of the protoplasm which leads to change in the function of the tissues into which the protoplasm enters. It is quite possible that pharmacologic agents may likewise influence chemic processes in the protoplasm without themselves being changed, but however this may be, it seems clear that the primary effect of remedial agents is exerted through their influence on cell-protoplasm, the nutritional processes of which are altered, with the result that the tissues into which the protoplasm enters are altered in function.

"In some instances their continued contact seems to give rise to further changes; something occurs which causes the drug molecules to lose their usual influence, and tolerance of, or immunity to the drug is produced. How far this immunizing effect of drugs extends we do not know. It seems to occur in certain people only in the case of arsenic. The alkaloid morphin is the best example of it, but it has been shown by Ehrlich to be produced by the two vegetable albuminoid substances, ricin and abrin. On the cause of immunization we can only speculate. The cell protoplasm may, owing to some alteration in its functions, expel the drug with unwonted quickness, or it may destroy it; but it seems more likely that some change takes place in the nutrition of the cell which renders it insusceptible to the influence which under normal conditions alters its functions.

"Turning now to the toxins, it may be noted that they disturb the functions of the various organs like other pharmacologic agents. They have a definite physiologic action, and there is no reason for believing that they act on tissues in a manner fundamentally different from other medicinal agents. They have, indeed, a more marked power than most drugs in producing immunity. It is impossible to say whether in this respect they act like ordinary drugs, but it can hardly be doubted that they produce their effects in a similar, if not in the same way.

"A third property which toxins have has not been shown to be common to the medicinal agents hitherto employed. They lead to the production of antitoxins, but how, we know not. Protoplasm has the power of altering substances which come in contact with it, and it is possible to imagine that by some subtle chemic influence the toxin is converted into a substance directly antagonistic to it in physiologic properties. But it seems far more probable that antitoxins are produced by the protoplasm itself, under the influence which the toxin exerts upon it. It is shown that the serum of blood does contain a bactericidal substance, and many years ago Hankin pointed out that the blood of certain animals normally contains what he called a 'defensive proteid,' to which Buchner subsequently gave the name of 'alexin,' and which practically is an antitoxin. If cell protoplasm has the property of thus normally producing such defensive material, it is not difficult to imagine that under the influence of certain toxins it may produce special antitoxins.

"The methods in which antitoxins act is as yet shrouded in obscurity. There is no reason for believing that their effects are produced in a manner different in kind from those of other drugs. The action, then, of the new animal substances seems not dissimilar from that of our older remedies."

The discussion on

THE TREATMENT OF INSOMNIA,

was then opened by DR. C. K. CLARKE of Kingston, Ont., who spoke on general treatment. After dealing with the physiology of sleep, and Howell's recent researches in particular, he proceeded to discuss the treatment of insomnia in various conditions. Drug treatment in general was deprecated. In acute mania the warm bath (104° F.), with cold applications to the head, and in neurasthenia massage, frictions, etc., were advocated. Stress was laid on McFarlane's view of sleeplessness as a bad habit, and regularity in the time of going to bed was recommended. Hot milk and beer were advised as adjuncts. In conclusion, the insomnia of toxemias, and that accompanying surgical disorders, was considered.

DR. R. W. WILCOX of New York then dealt with

THE MODE OF ACTION OF HYPNOTICS.

Howell's, Ramon y Cajal's, and Ruckhard's views of the physiology of sleep were treated of in detail and the action of alcoholic radicals, chlorin in organic combination, etc., was alluded to. The treatment of insomnia by drugs was then considered. Of vegetable narcotics, pellotin was regarded with favor; his experience with amylene hydrate, methylal, paraldehyde, chloral, chloralamid, sulphonal, trional, tetronal, and urethan was given, his paper closing with a comparison of paraldehyde, chloralamid, pellotin, and trional as regards potency, rapidity, and duration of action, habituation, and safety.

THE ILL EFFECTS OF, AND CONTRA-INDICATIONS TO THE USE OF HYPNOTICS

were then considered by DR. A. MCPHEDRAN. The physiology and etiology of sleeplessness were first summarized and the ill effects of individual drugs subsequently dealt with. Hypnotism, it was recommended, should be resorted to but rarely, and only when other means have failed.

DR. EDIS of Jamaica Plains contributed a paper on this subject and dwelt on the value of gentle fatigue.

PROFESSOR RICHET of Paris gave an excellent description of the pharmacology of chloralose, and the discussion was continued by Drs. D. Macalister, Saundby, Cushing, Barnes, MacCallum, Learned, Campbell, Muir, Brookhouse, Whitla, Rayner, Smith, Atkinson, and the President. There was a consensus of opinion that hypnotics should only be used as a last resource. Chloral was deprecated by the majority, and sulphonal also received some strictures. Dr. Donald Macalister confined his remarks to the insomnia occurring in otherwise healthy subjects, and strongly recommended what he termed the air-bath, the wet sack, and as drugs, strychnin in coffee, and magnesium sulphate. Dr. Saundby believed the older hypnotics were the best, and DR. Learned dealt in detail with a physical mode of treatment he had found beneficial. Dr. Whitla regarded the use of digitalis, with chloral, etc., as useless, and strongly recommended chloral as an hypnotic. Dr. Leech closed the debate by a few pregnant remarks on the treatment of sleeplessness in the old and the middle-aged.

SECOND DAY—SEPTEMBER 2D.

This section met jointly with the Section in Dermatology to discuss the subject of

THE TREATMENT OF SYPHILIS.

The Chair was taken by DR. D. J. LEECH. The subject was introduced by DR. WHITLA of Belfast, Ireland, who said that two drugs alone need be considered—mercury and the iodids. He regarded it as proved that mercury has a specific or curative effect on syphilis, and thought it best to limit his attention to the following points: (1) How mercury and the iodids are supposed to act; (2) when should mercurial treatment be begun; especially, should it be given in the primary stage? (3) the various methods for its routine administration, its dosage, and the length of time necessary for mercurial treatment; (4) the treatment of tertiary symptoms and congenital syphilis. The pharmacology of mercury—the mode of absorption especially when administered by inunction, its elimination, etc., was considered. Mercury he regarded as a vital antidote to the syphilitic poison, and so long as the virus of syphilis remains in the organism, mercury, he believed, would expend its force upon it without injury to the patient. This, he thought, gave a working hypothesis as regards dosage. The question of the bactericidal power of iodids in connection with Binz's view was dealt with, and their inutility in the first and early second stages emphasized. The continuous and interrupted methods of administering mercury were treated at length, although it was stated that these could not be rigidly separated. The continuous method was favored by the speaker. He prescribes small doses as early as possible. Routine treatment was deprecated. As a guide determining the effect of the mercury, the weight-chart was strongly recommended. Of the various modes of administration, the method of inunction is most generally useful, although this possesses many disadvantages. Under ordinary circumstances small doses of mercurous iodids are sufficient. In the tertiary stage he advised pushing the iodids until the symptoms abate.

DR. NEVINS HYDE of Chicago laid particular stress on the constitution of the individual. He believes that there are mild cases needing little or no treatment, and severe cases (mainly inherited) which seem insusceptible to all treatment. Between these is the mass of cases giving the most satisfactory results. The best effects are obtained where iodids are not used; they are the remedies for the complications.

MR. MALCOLM MORRIS divided syphilitics into those who take alcohol and those who do not. He had not seen good results from intramuscular injections. The mercurial air-bath in certain conditions (extensive ulcerations) is strongly to be recommended, and to this treatment inunction, warm baths, especially those of a stimulating character, are useful adjuncts. The combination of ammonia and sarsaparilla with iodids is beneficial.

DR. L. DUNCAN BULKLEY of New York thought large doses of iodids unnecessary in the third stage if these drugs are combined with a small amount of mercury. The President then closed the discussion by referring to the inutility of other drugs than mercury and iodin, and agreed with Dr. Whitla in believing it often necessary to push iodids in the third stage of this disease. Combination of the iodids with ammonia is useful.

DR. WHITLA, in reply, said that the whole secret of success in the treatment of syphilis is to get as much mercury into the system as possible without producing ill effects.

DR. A. R. CUSHNEY of Ann Arbor, Mich., then read a paper on

PHARMACOLOGY OF THE MAMMALIAN HEART.

He demonstrated his method of experimenting, and showed tracings of the effect of aconite, digitalis, chloroform, alcohol, nitroglycerin, etc.

THIRD DAY—SEPTEMBER 3D.

The discussion on

DIURETICS

was opened by DR. BARR of Liverpool, who dwelt at length on the physics of the circulation, especially in pathologic conditions. He then proceeded to deal with the treatment of diseases in which diuretics are indicated. The flushing process is based on the principle of washing out waste products, ptomains, etc., and natural springs are no better than similar artificial products for this purpose. In granular kidney the best treatment, he thought, is to cut off nitrogenous foods, to take a purely vegetable diet, to drink whey and mild alkalin waters, and to regu-

late the intestinal secretions by calomel. Benzoate of ammonium in uremia was recommended. In heart disease, cardiac tonics, combined in some cases with vasodilators, were regarded as most efficacious. In obstructive lung disease, ammonia, senega, and the saline diuretics; in cirrhosis of the liver, vasomotor and cardiac tonics with mild saline purgatives; in hysteria with anuria, water and whey freely, and general venesection and antimony were regarded as the most effectual agents in the dropsy of acute Bright's disease. In conclusion, the speaker said that diuretics are simply adjuncts to treatment; that no disease or process of disease should be solely treated by them.

MR. C. R. MARSHALL of Cambridge, England, then dealt with the action of diuretics. As this subject could not be separated from the physiology of renal secretion, this was first considered. Various recent views were mentioned and criticized, and the possibility of explaining urinary excretion on a purely physical basis dealt with. Special stress was laid upon the metabolism of the renal cells as factors in accounting for the composition of the urine. The definition, classification, etc., of diuretics was next considered, and an illustration of so-called tachyuretics was given. Munk's, Sobieranski's, and Raphael's work was specially considered, and the action of certain types of diuretics described.

DR. J. E. ATKINSON of Newcastle, England, spoke on the absence of increased diuresis after the administration of nitrites and nitroglycerin, and Dr. Shingleton Smith of Bristol, England, referred to the effect of digitalis and diuretics in certain conditions, and commented on the fact that apocynum cannabinum had not been mentioned. This is little known in England, but in some cases it is a useful diuretic.

DR. H. A. MCCALLUM of London, Ont., then read a paper on

THE ACTION OF BEHRING'S SERUM IN DISEASES NOT CAUSED BY THE KLEBS-LOEFFLER BACILLUS.

The effect on consumption, cancer, pelvic inflammation, lupus, etc., was discussed. In one case of tuberculosis 25,000 units of the serum were given during three months, apparently with benefit. A favorable action was reported in a case of lupus. The theory suggested was that the serum increases the internal secretions.

In connection with this paper, DR. BAZIN'S, on

DIPHTHERIA ANTITOXIN,

was read. He regarded it as important that the strength, date of production, etc., should be stated on the label. He believed that a "clinical suspicion" affords sufficient grounds for the use of the serum. Bacterial examination should follow this. Immunization should be more generally followed.

THE PRESIDENT asked if cardiac failure does not sometimes follow the injections, but Dr. Bazin believed this is a coincidence, and not a result of the antitoxin. He corroborated Dr. McCallum's observations on the hypnotic effect of the serum, and stated that slight turbidity, or rather fluorescence, is not prohibitive to its use.

THERAPEUTIC HINTS.

Fever Mixture for a Child.—The combination here given will act most efficaciously in reducing the temperature of a child in those cases in which no etiologic factor is discoverable:

℞	Tr. aconiti	gtt. v
	Potassii bromidi	ʒ ss
	Spt. etheris nitrosi	ʒ ii
	Mist. potassii citratis	℥ ii.

M. Sig. Teaspoonful every three hours.

For Chronic Constipation accompanied by torpidity of the liver the following will prove very efficacious:

℞	Sodii sulphatis	℥ i
	Sodii phosphatis	ʒ ss
	Potassii iodi	gr. xl.

M. et. ft. Chart. No. viii. Sig. One powder in a glassful of either hot or cold water on rising in the morning.

For Urticaria.—The following remedy is of service in urticaria:

℞	Menthol	1 part
	Chloroform, Ether, Spirits of camphor (aa)	3 parts.

M. Sig. After an application of the above dust the skin with oxid of zinc. If the urticaria is of a stomachal origin, give laxatives, preferably the saline waters.—*Jour. de Méd. de Paris.*

For Catarrhal Sore Throat.—

℞	Pulv. aluminis	gr. xv
	Acidi hydrochlor. dil.	*m* x
	Mellis	ʒ i
	Aquæ, q. s. ad.	℥ i.

M. Sig. ʒ i added to ℥ viii of water, used as a gargle when necessary.

An Old and Excellent Tonic Mixture Is the Following:

℞	Liq. arsenici chloridi	℥ ss
	Tinct. ferri chloridi	℥ iss
	Cinchoniæ sulphatis	ʒ ii
	Strychniæ sulphatis	gr. ii
	Syrupi, Aquæ (aa) q. s. ad.	℥ vi.

M. Sig. Teaspoonful in water three times a day before meals.

A Good Antineuralgic Combination Is the Following:

℞	Acidi arseniosi	gr. iv
	Strychniæ sulph.	gr. iii
	Ext. belladonnæ	gr. xxiv
	Cinchonæ sulph.	ʒ i
	Pilulæ ferri carbonatis	ʒ v.

M. Sig. One pill three times daily after meals.

Chloral May Be Pleasantly Combined as Follows;

℞	Chloral hydrat.	ʒ i, ↄ i
	Tinct. cardamomi	ʒ ss
	Syrupi	ʒ i
	Aquæ cinnamomi, q. s. ad.	℥ i.

M. A. teaspoonful contains 10 grs. of chloral.